

389 National

1958

**THE  
NATIONAL  
FACTORY  
SYSTEMS**











# NATIONAL FACTORY SYSTEMS



**I**N every manufacturing establishment there are certain operations which have become so much a part of the common routine, so incidental to other operations, that their real relation to production costs and efficiency often escapes notice, and little attention is paid to how the work is done or how much it costs.

The purpose of the National Factory Systems is to salvage some of the money lost on these operations. That the usefulness of these systems has been recognized is evidenced by the fact that they have been put to work in thousands of establishments in more than one hundred industries. They reduce to a minimum the cost of four specific operations—Counting, Trucking, Man Finding and Storage.

Counting and trucking operations begin at the receiving room when the incoming material has been checked against invoices, tallied for transportation charges, and moved to the supply room or to the next operating department. They continue as the materials go through the numerous departments when in process of manufacture. They enter into the work wherever records are kept to detect shortages between departments, to prevent misplacement of stock, etc. They are found in the general problem of moving material from department to department, operator to operator, machine to machine.

In the establishment having even comparatively few departments the problem of communicating quickly with men in and about the plant is a real one. It becomes an increasing problem and greater expense where the plant has more departments, more buildings, etc.

The storage of raw material, finished and unfinished stores, etc., affords abundant opportunities for loss of time and loss of material unless facilities are provided for taking care of such property in an economical and effective way.

These are the problems attacked and solved by National Factory Systems, aided by National Counting Machines, National-Chapman Elevating Trucks, the National Calling System and "Multi-Unit" Sectional Steel Shelving, which equipment is fully described on the following pages of this Catalog.

## NATIONAL SCALE COMPANY

Distributors for the National Counting Machine Company  
CHICOPEE FALLS, MASSACHUSETTS, U. S. A.

COUNTING MACHINE DIVISION  
ELEVATING TRUCK DIVISION

ELECTRICAL DIVISION  
STANDARD STEEL SHELVING DIVISION





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**NATIONAL  
COUNTING  
AND  
WEIGHING  
MACHINES**







## NATIONAL COUNTING AND WEIGHING MACHINES



**I**NSTEAD of a handful, counting a barrel full on a No. 201-Z National Counting Machine at the plant of Stewart-Warner Speedometer Corporation, Chicago, Ill.





## WHAT THEY WILL DO

**N**ATIONAL COUNTING MACHINES give an accurate and quick count of any commodity, consisting of similar parts or pieces, without the use of tabulated figures of weights, mental calculation, or figuring of any kind. The total count of the contents of any box, barrel, bag, truck, or barrow containing an unknown number of like parts or pieces can be determined accurately and almost instantly.

There is no chance for confusion of figures, errors in estimates, or defective calculations, as the accuracy of the count is governed mechanically. Mental fallibility is eliminated and from fifty to ninety per cent. of time and labor is saved over every other known method or device employed for the purpose of counting.

The method is one of ratio weight, scientifically applied in a simple machine of few parts, which any ordinary laborer can operate and understand.

While knowledge of the weight of the material handled is at no time a feature in obtaining count, yet whenever it is so desired, weight and count may be secured at practically one operation.

National Counting Machines are used for counting various classes of manufactured material, and material in process of manufacture. In shipping room, receiving room, packing room, stock room, store room, for piece work operations, inspection work, inventory work, cost and estimating departments, stationery and advertising departments, and for any and all places where checking, counting and weighing have to be done, these machines are being successfully used and have proven invaluable.

On the following pages we give descriptions of the twenty-seven types and sizes of National Counting Machines, together with a list of many varieties of materials in the handling of which they are used extensively.

**“Instead of a Handful  
Count a Barrel Full”**

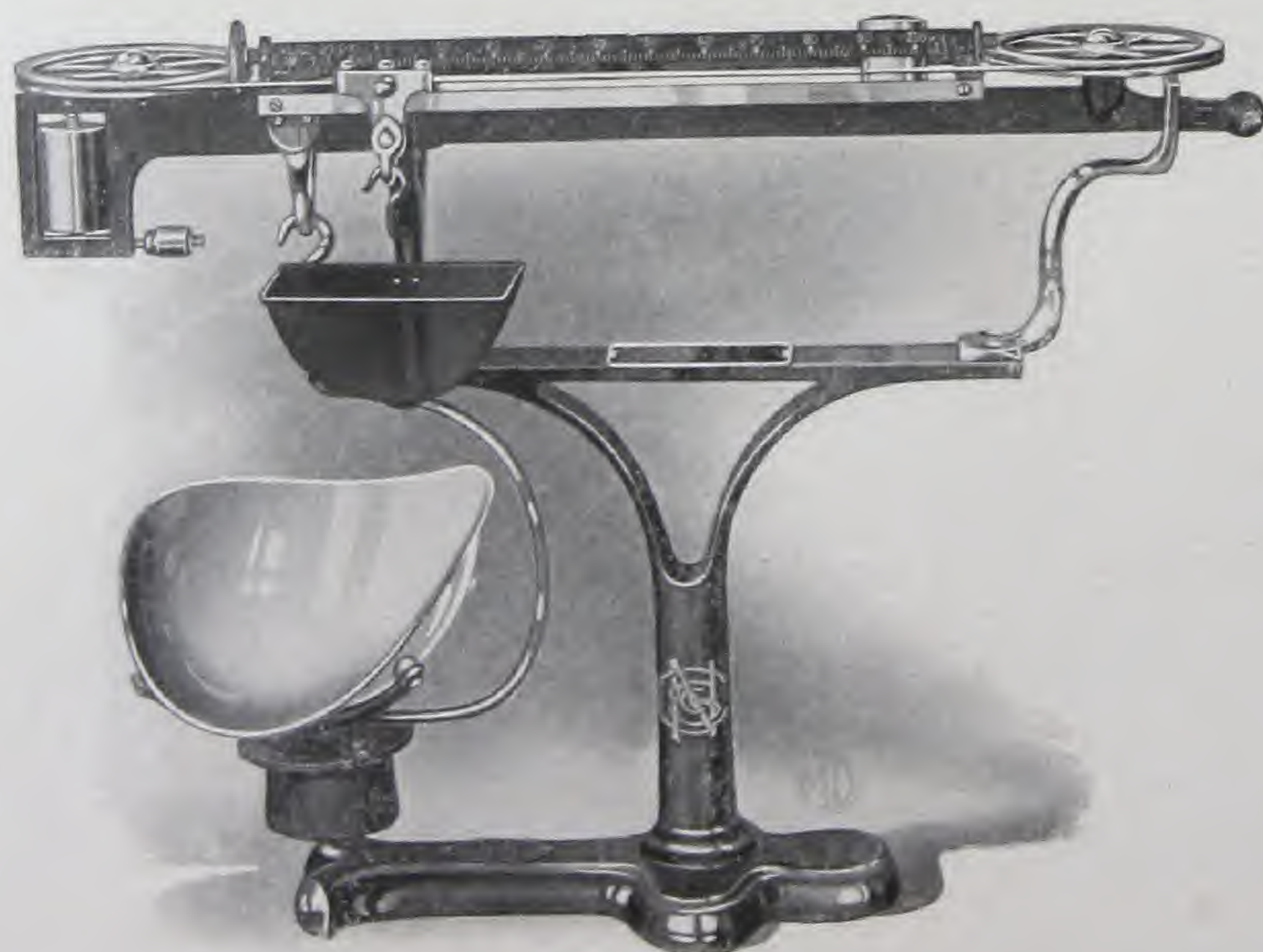




# NATIONAL COUNTING AND WEIGHING MACHINES



*National Counting Machines are found at work in almost every industry. The machines shown here are counting medicinal tablets for Bristol-Myers Co., Manufacturing Chemists, Brooklyn, N. Y. — saving hours of laborious hand counting.*



## No. 91

(Ratio 5 to 1)

Accurately counts pieces  
weighing 250 to ounce  
and over

Standard machines graduated to count  
in units. All agate bearings. When  
desired, special machines will be fur-  
nished to count by the dozen or gross.

Load Capacity  
**5 lbs.**

Shipping weight of this machine 70 lbs.

See Special Notice on Page 16





# NATIONAL COUNTING AND WEIGHING MACHINES



*Like hundreds of other efficient firms the Pyrene Mfg. Company, New York City, wastes no time in hand counting material. National Counting Machines do the counting.*

## No. 92

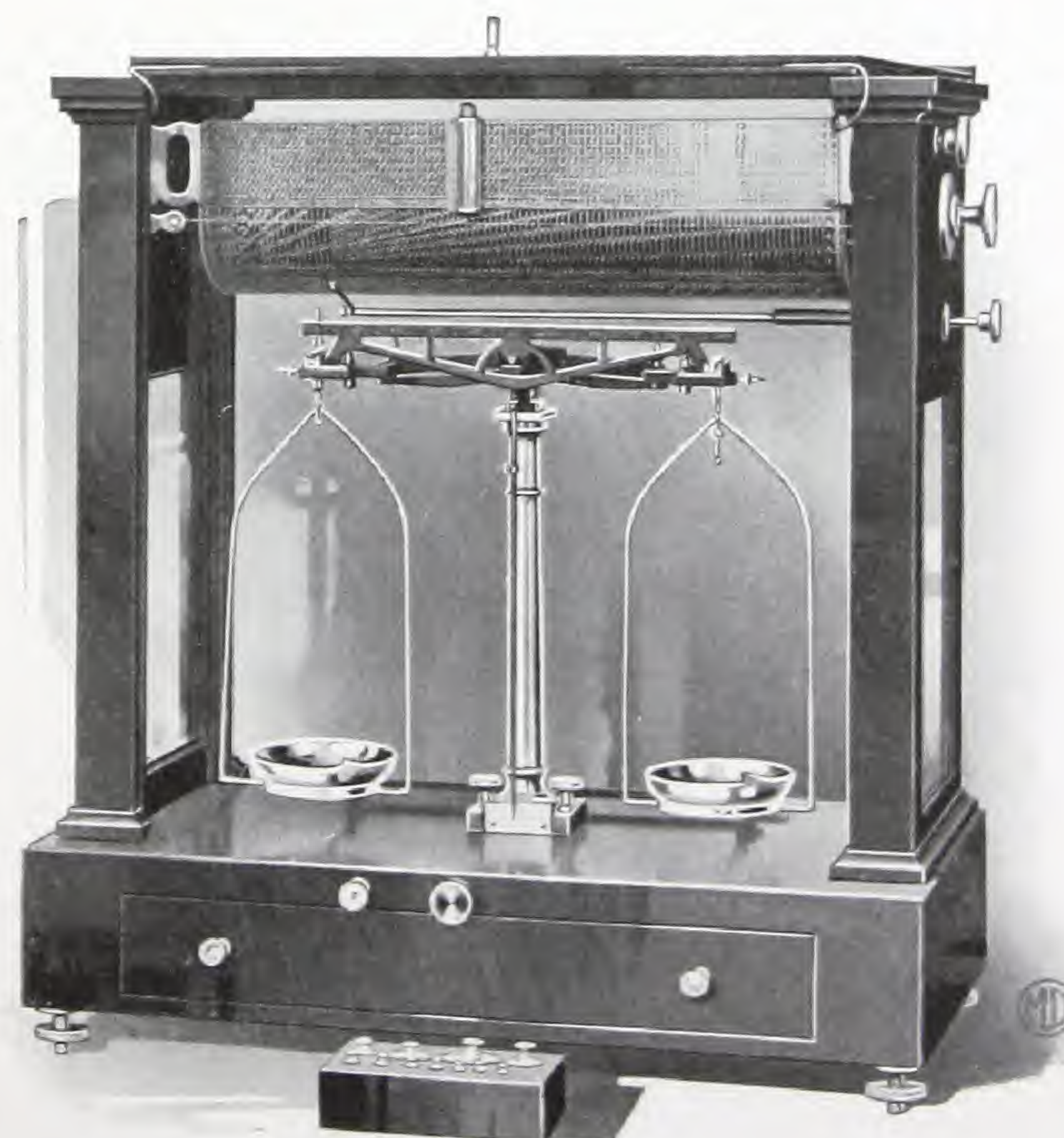
Adapted especially for  
Watch and Jewelry  
Manufacturers

A machine which counts pieces weighing 25,000 to the ounce and larger. The extreme sensitiveness of this machine enables it to accurately count pieces too tiny for the eye to see.

Load Capacity  
**8 ounces**

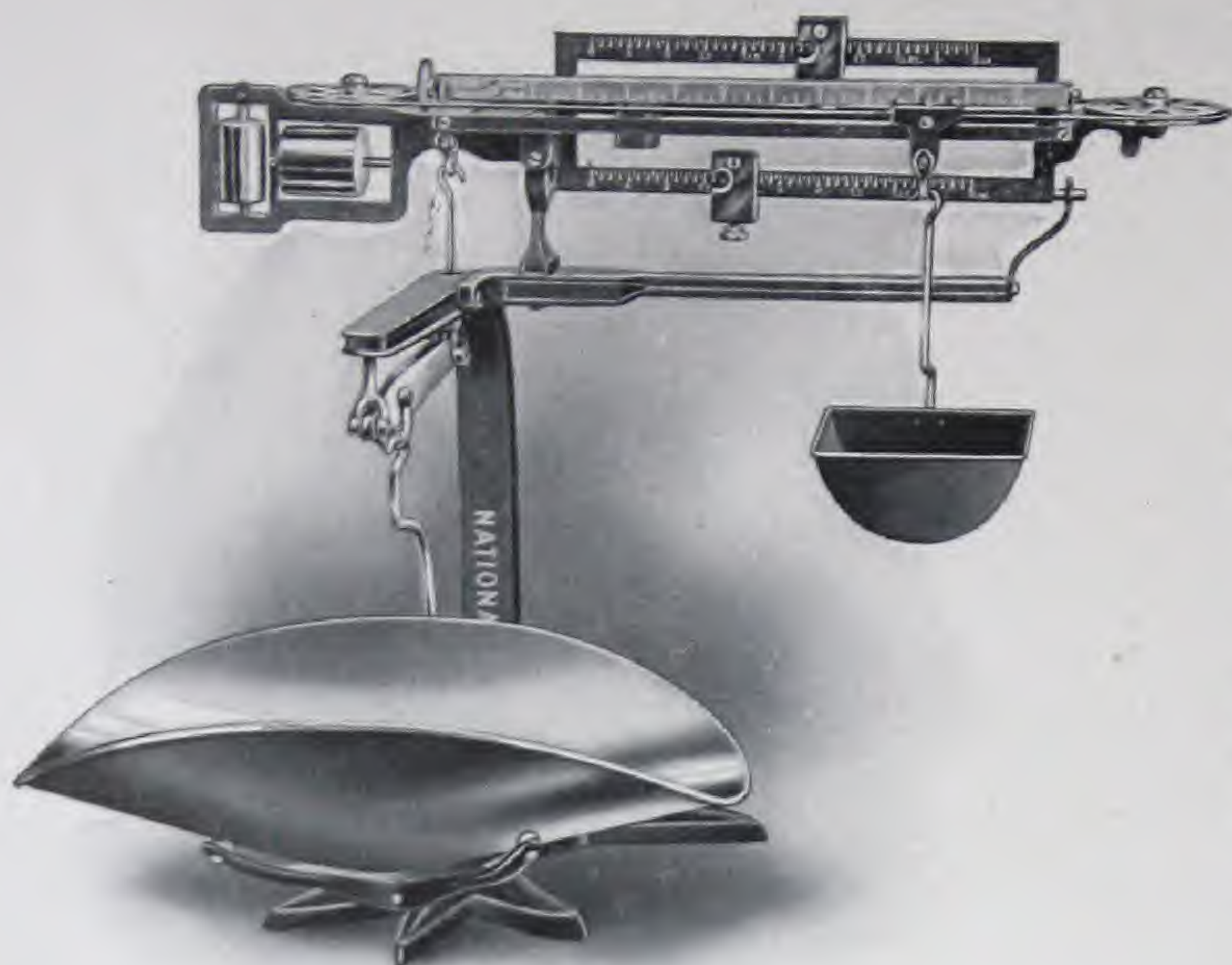
Shipping weight of this machine 100 lbs.

See Special Notice on Page 16





# NATIONAL COUNTING AND WEIGHING MACHINES



## No. 95

(Ratio 20 to 1)

Accurately counts pieces weighing 1-50 ounce and over

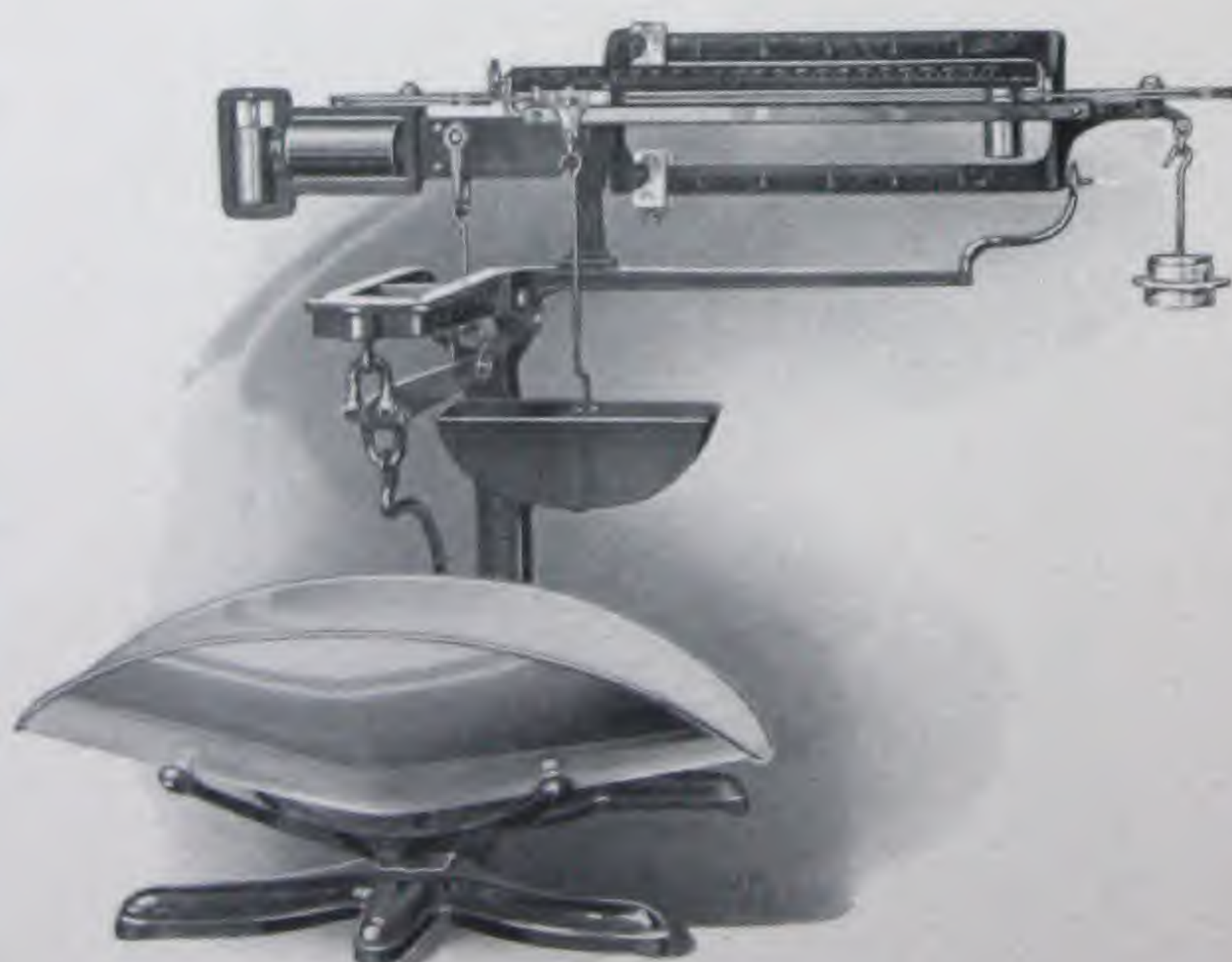
Equipped with double weighing beam. Both bars graduated by  $\frac{1}{2}$  oz. to  $2\frac{1}{2}$  lbs. Agate bearings.

**Load Capacity**  
**5 lbs.**

Standard machines graduated to count in units. When desired, special machines will be furnished to count by the dozen or gross.

Shipping weight of this machine 70 lbs.

See Special Notice on Page 16



## No. 96

(Ratio 25 to 1)

Accurately counts pieces weighing 1-32 ounce and over

Regularly equipped with double weighing beam. Hanging platform, with platform scoop, can be supplied on either this model or model 95. Both bars graduated by  $\frac{1}{2}$  oz. to 5 lbs. Agate bearings.

**Load Capacity**  
**25 lbs.**

Standard machines graduated to count in units. When desired, special machines will be furnished to count by the dozen or gross.

Shipping weight of this machine 140 lbs.

See Special Notice on Page 16





# NATIONAL COUNTING AND WEIGHING MACHINES



## No. 97

(Ratio 50 to 1)

Accurately counts pieces  
weighing 1-4 ounce  
and over

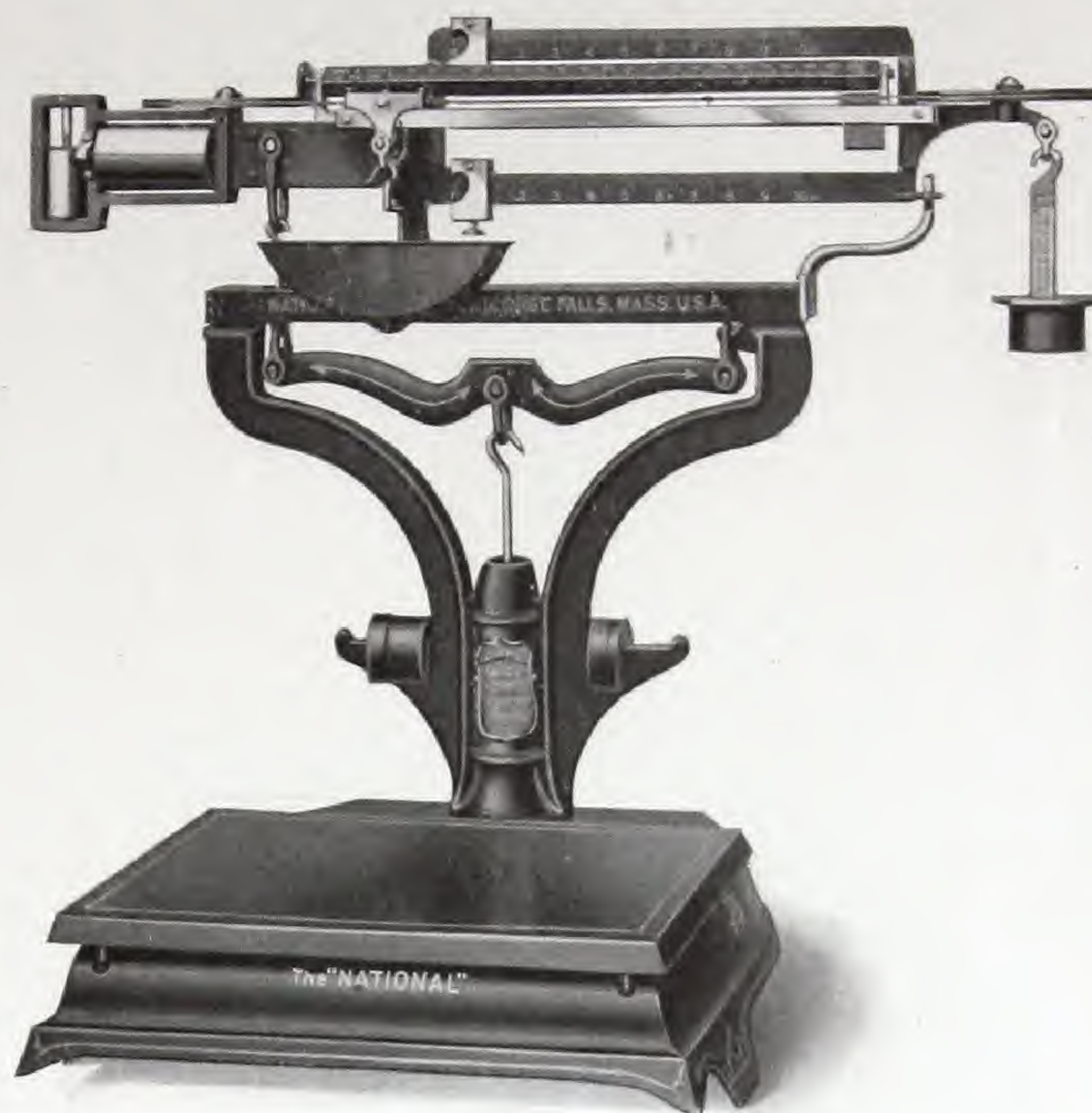
Equipped with double weighing beam.  
Both bars graduated by 1 oz. to 10 lbs.  
Graduated counterpoise and weights.  
Size of platform, 12 x 15 inches. Scoop  
furnished as standard equipment.  
Agate bearings.

Load Capacity  
**100 lbs.**

Standard machines graduated to count  
in units. When desired, special  
machines will be furnished to count by  
the dozen or gross.

Shipping weight of this machine 150 lbs.

See Special Notice on Page 16



## No. 97½

(Ratio 100 to 1)

Accurately counts pieces  
weighing 1-4 ounce  
and over

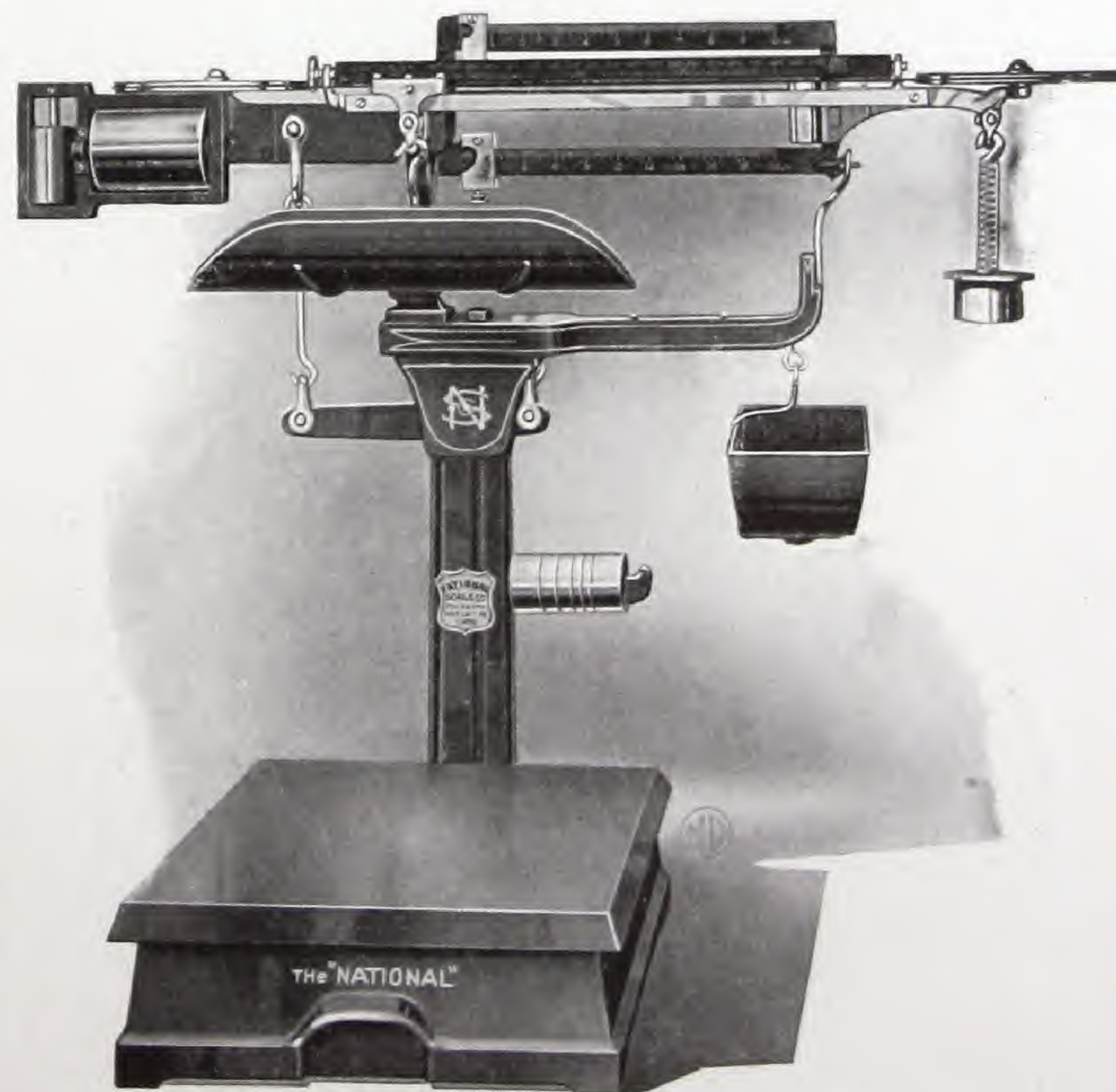
Equipped with double weighing beam.  
Upper bar graduated by 1 oz. to 10 lbs.  
Lower bar, 2 oz. to 20 lbs. Size of plat-  
form, 13 x 19 inches. Scoop furnished  
as standard equipment. Agate bearings.

Load Capacity  
**300 lbs.**

Standard machines graduated to count  
in units. When desired, special  
machines will be furnished to count by  
the dozen or gross.

Shipping weight of this machine 180 lbs.

See Special Notice on Page 16







# NATIONAL COUNTING AND WEIGHING MACHINES



## Nos. 98 and 99 Portables

(Ratio 200 to 1)

Accurately count pieces  
weighing 1 ounce  
and over

Equipped with double weighing beam.  
Both bars graduated by  $\frac{1}{2}$  lb. to 100  
lbs. Graduated counterpoise and  
weights. Agate bearings.

No. 98—Iron platform 24 x 24 in.;  
capacity, 600 lbs.

No. 99—Iron platform 28 x 28 in.;  
capacity, 1,000 lbs.

Standard machines graduated to count  
in units. When desired, special machines  
will be furnished to count by the dozen  
or gross.

Shipping Weights { No. 98, 315 lbs.  
No. 99, 390 lbs.

See Special Notice on Page 16



## Nos. 201 - 202 - 203 Portables

(Ratio 200 to 1)

Accurately count pieces  
weighing 2 ounces  
and over

Equipped with double weighing beam.  
Both bars graduated by  $\frac{1}{2}$  lb. to 100  
lbs. Graduated counterpoise and  
weights. Agate bearings.

No. 201—Iron platform 44 x 35 in.;  
capacity, 1,000 lbs.

No. 202—Iron platform 44 x 35 in.;  
capacity, 1,500 lbs.

No. 203—Iron platform 44 x 35 in.;  
capacity, 2,000 lbs.

Standard machines graduated to count  
in units. When desired, special machines  
will be furnished to count by the dozen  
or gross.

Shipping weights { No. 201, 750 lbs.  
No. 202, 830 lbs.  
No. 203, 900 lbs.

See Special Notice on Page 16





# NATIONAL COUNTING AND WEIGHING MACHINES



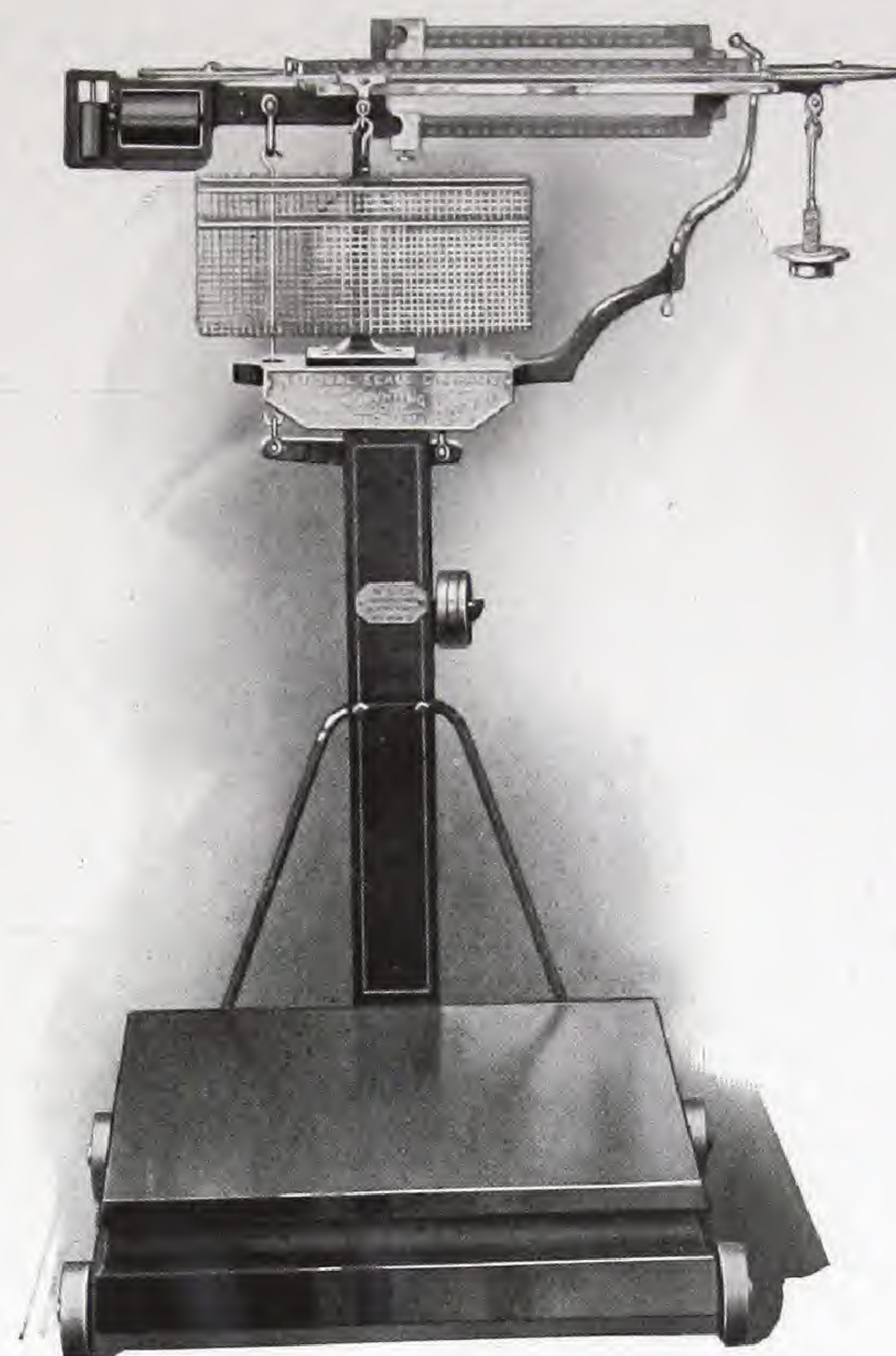
## Style Z

Construction as shown has been designed for use where extra large ratio-pans are required for counting bulky material. It can be furnished on machines of the following sizes, Nos. 98, 99, 201, 202, 203, 300, 301, 302, and Narrow Aisle Model.

In ordering this construction, write "Z" after number of machine desired.

Shipping Weights—The shipping weights of machines fitted with Z Type construction are identical with the cataloged weights of standard models of the same number.

See Special Notice on Page 16



## Nos. 300-301-302 Wheelbarrows

(Ratio 200 to 1)

FOR FACTORY AND WAREHOUSE

Accurately count pieces weighing  
2 ounces and over

Equipped with double weighing beam. Both bars graduated by  $\frac{1}{2}$  lb. to 100 lbs. Graduated counterpoise and weights. Agate bearings.

No. 300—Iron platform 44x35 in.; capacity, 1,000 lbs.

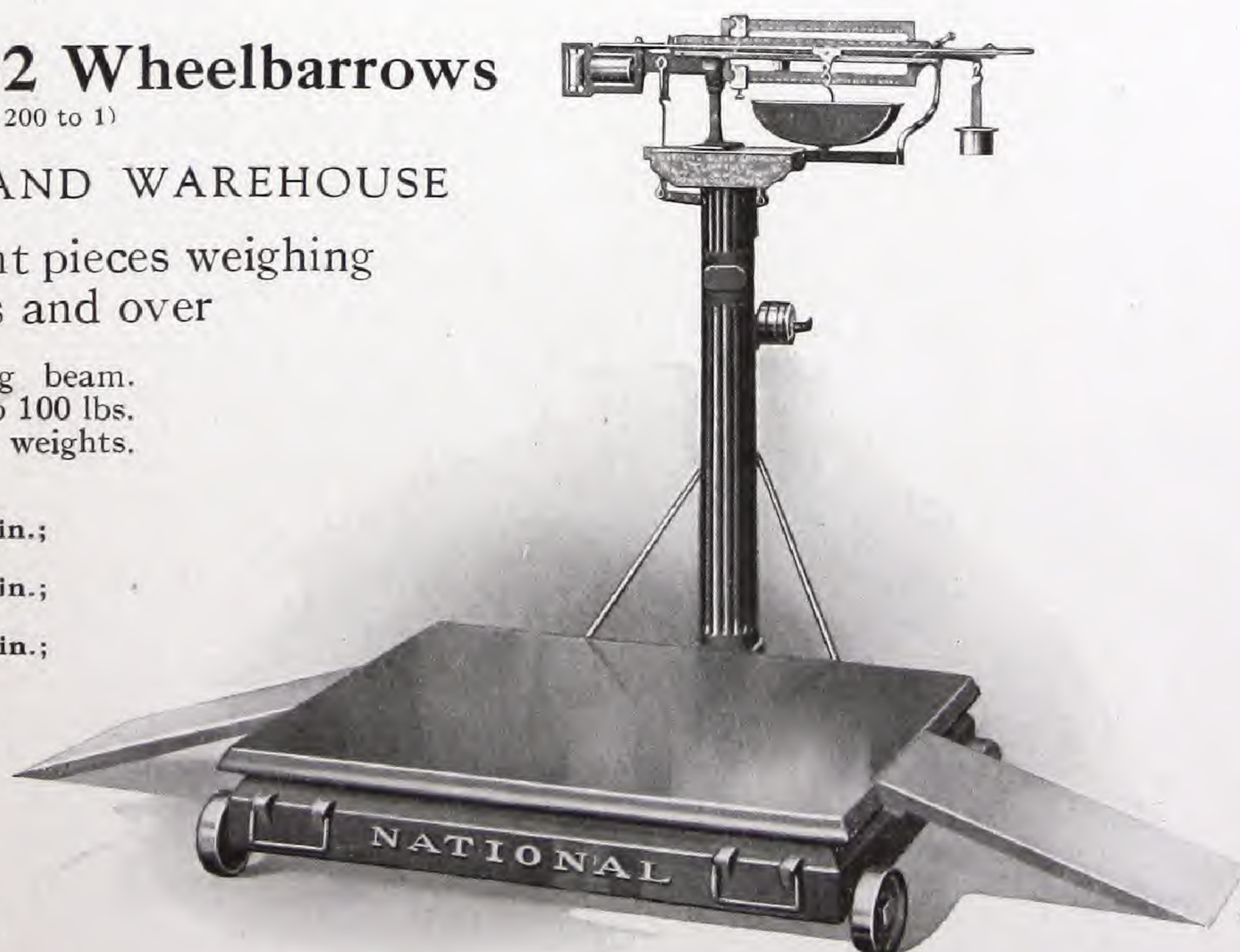
No. 301—Iron platform 44x35 in.; capacity, 1,500 lbs.

No. 302—Iron platform 44x35 in.; capacity, 2,000 lbs.

Standard machines graduated to count in units. When desired, special machines will be furnished to count by the dozen or gross.

Shipping Weights	{	No. 300, 1,000 lbs.
		No. 301, 1,025 lbs.
		No. 302, 1,050 lbs.

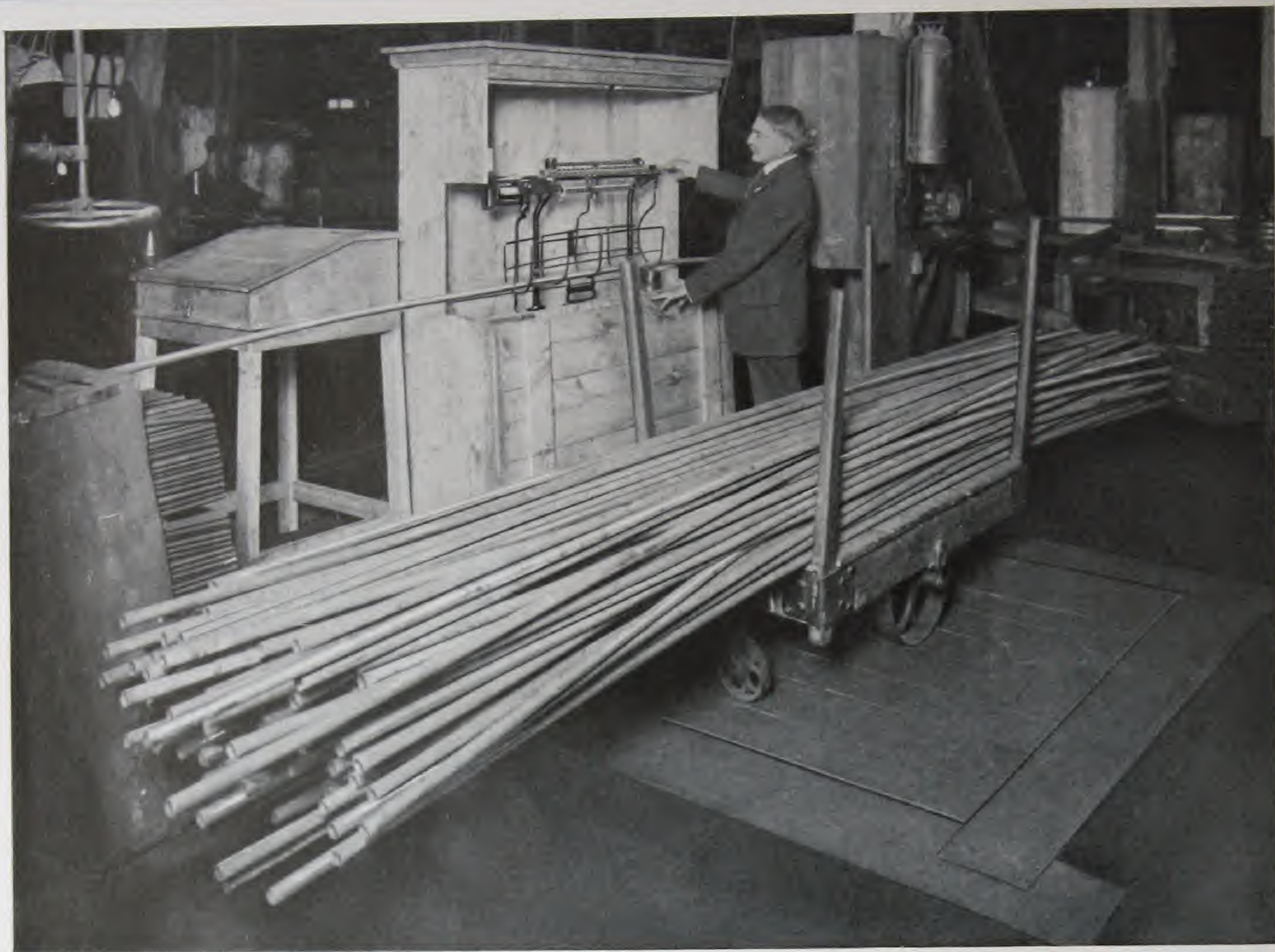
See Special Notice on Page 16



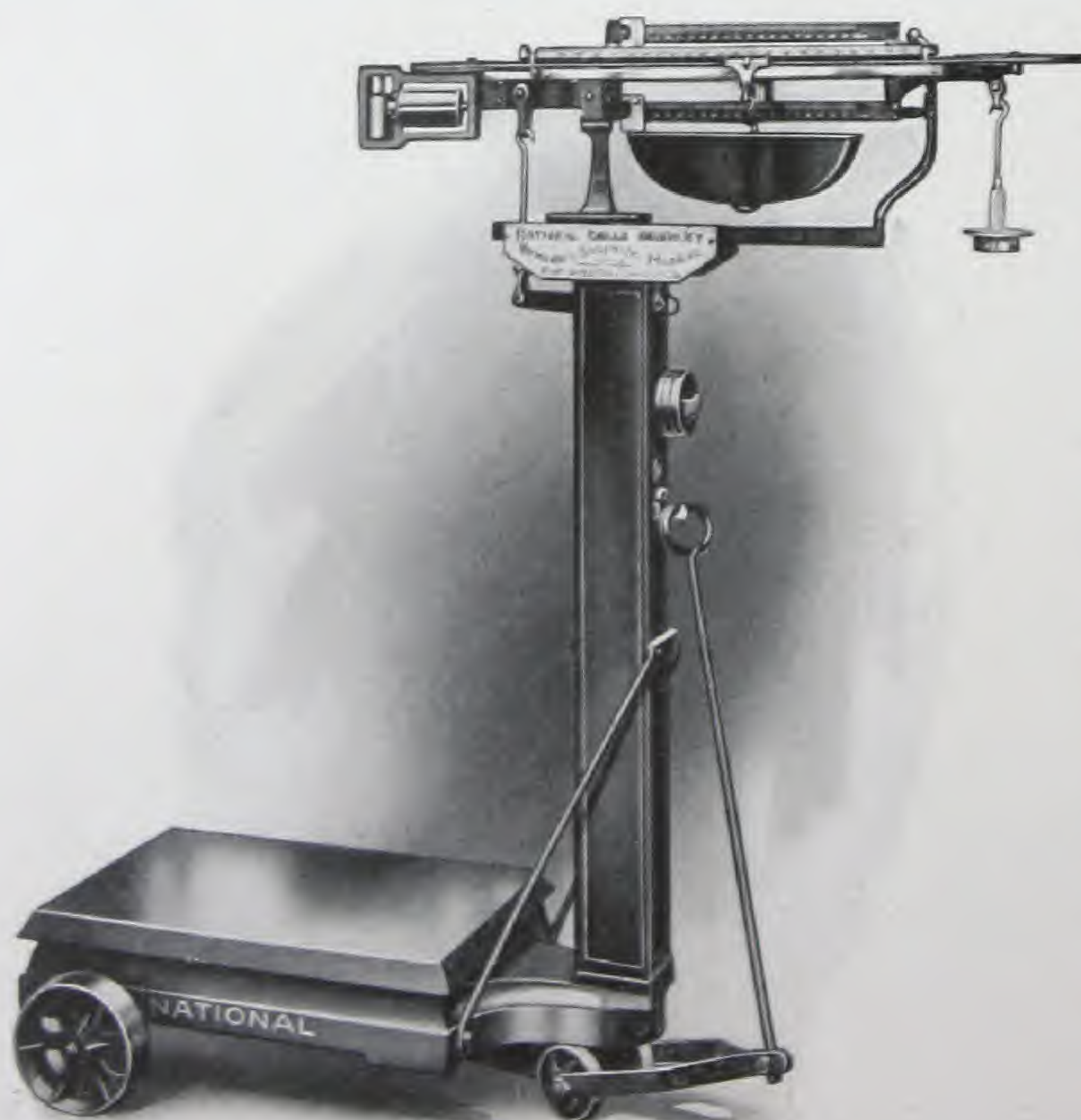




# NATIONAL COUNTING AND WEIGHING MACHINES



*After each one of fourteen different operations these tubes are counted on a National Counting Machine, Dormant Type. The machine shows in one minute the number of tubes contained in the load on the truck. Newark Tube & Metal Works, Inc., Newark, N. J.*



## Narrow Aisle Model

(Ratio 200 to 1)

Accurately counts pieces  
weighing 1 ounce  
and over

This machine has been designed for use in narrow aisles. It has swivel front wheels and a handle bar by which it can be hauled wherever desired. Equipped with double weighing beam. Both bars graduated by  $\frac{1}{2}$  lb. to 100 lbs. Graduated counterpoise and weights. Agate bearings.

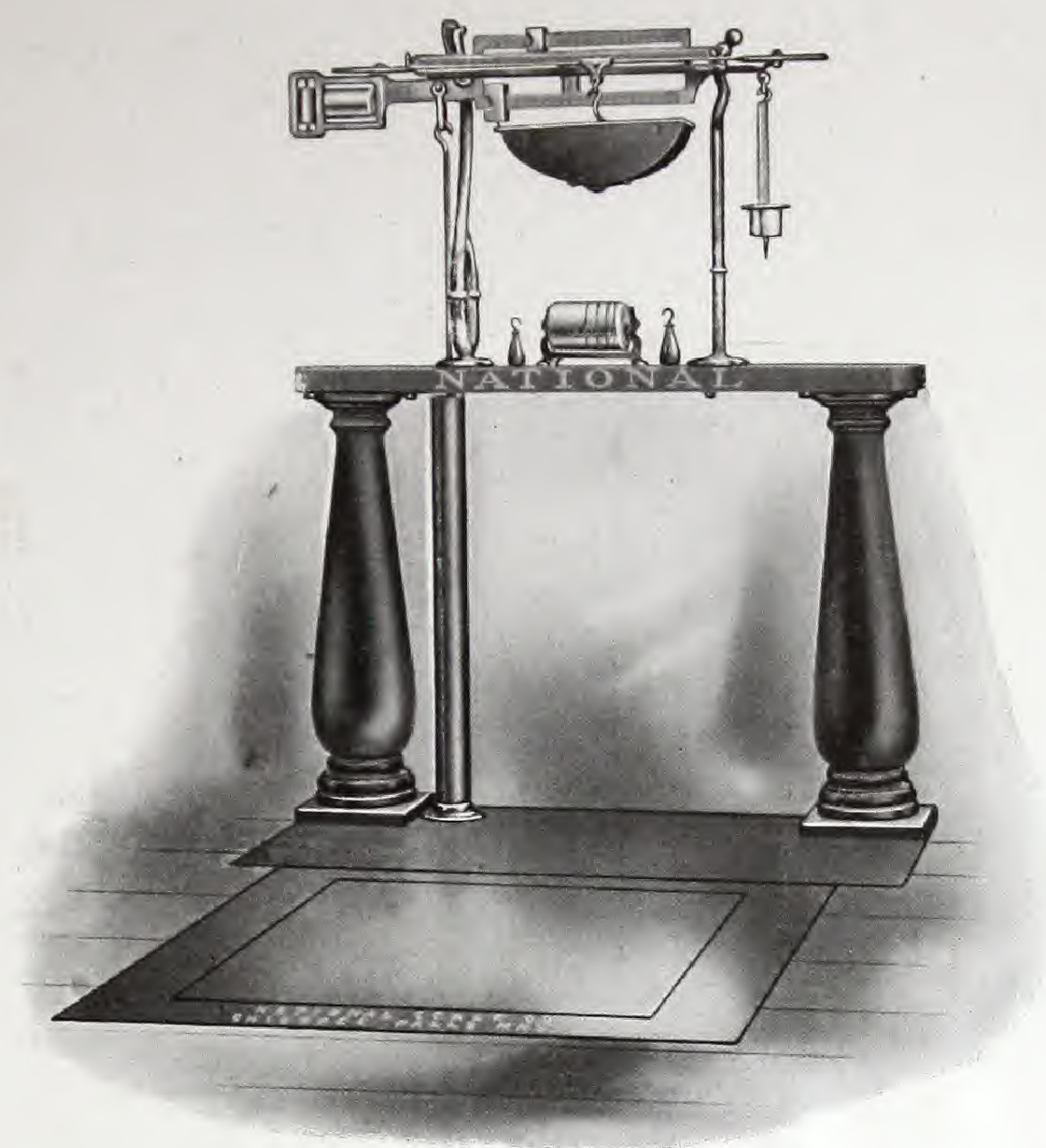
Iron platform 16 x 24 in.;  
capacity, 600 lbs.

Standard machines graduated to count in units. When desired, special machines will be furnished to count by the dozen or gross.

The shipping weight of this machine is 300 lbs.

See Special Notice on Page 16





## Dormants

Designed Especially for Factory and Warehouse Use

**E**QUIPPED with double weighing beam. From Nos. 100 to 400, inclusive, all upper weighing bars are graduated by  $\frac{1}{2}$  lb. to 100 lbs. All lower weighing bars are graduated by 1 lb. to 200 lbs. From Nos. 502 to 506, inclusive, all upper and lower weighing bars are graduated by  $\frac{1}{2}$  lb. to 200 lbs. Graduated counterpoise and weights. Agate bearings.

In ordering Dormant Machines, state whether it is desired to operate the beam, which has the counting and weighing device, from the platform side or from the rear of the machine.

Standard machines are graduated to count in units. When desired, special machines will be furnished to count by the dozen or gross.

*In all platform sizes the first figure denotes the dimension parallel with beam.  
Lumber for platform and frame NOT furnished on the 500 series.*

No.	RATIO 200 TO 1		Min. Weight of Pieces Accurately Counted	Shipping Weights of Machines	No.	RATIO 400 TO 1		Min. Weight of Pieces Accurately Counted	Shipping Weights of Machines
	Size of Platform	Load Capacity				Size of Platform	Load Capacity		
100	36 x 38	2,000 lbs.	2 oz.	825 lbs.	502	72 x 48	3,500 lbs.	3 oz.	1,400 lbs.
101	43 x 45	2,500 lbs.	2 oz.	1,090 lbs.	503	72 x 48	5,000 lbs.	3 oz.	1,500 lbs.
102	48 x 48	3,500 lbs.	3 oz.	1,245 lbs.	504	72 x 48	6,000 lbs.	3 oz.	1,600 lbs.
103	48 x 54	5,000 lbs.	3 oz.	1,355 lbs.	505	72 x 48	8,000 lbs.	3 oz.	1,650 lbs.
104	48 x 54	6,000 lbs.	3 oz.	1,380 lbs.	506	72 x 48	10,000 lbs.	3 oz.	1,700 lbs.
400	46 x 38	2,000 lbs.	2 oz.	910 lbs.					

See Special Notice on Page 16





*Using the National Counting Machine to get the correct net weight of silk wound on spools. Hundreds of spools are sometimes handled at one operation by using a sufficiently large receptacle on the platform. Photograph taken at the mill of J. A. Migel, Silk Manufacturer, West Hoboken, N. J.*

## SPECIAL NOTICE

**U**NLESS otherwise ordered, machines will be fitted with standard counting bars. These bars are graduated to count in units to meet the requirements of the majority of users.

Bars to count by the dozen or gross will be furnished when desired, and purchasers should be careful to state by which method they desire to count. Where a combination of methods is used, bars combining either two or three methods will be supplied. Where gross count is used and unit gross is other than 144, the standard desired should be specified. Special bars are subject to slight delay in shipment.

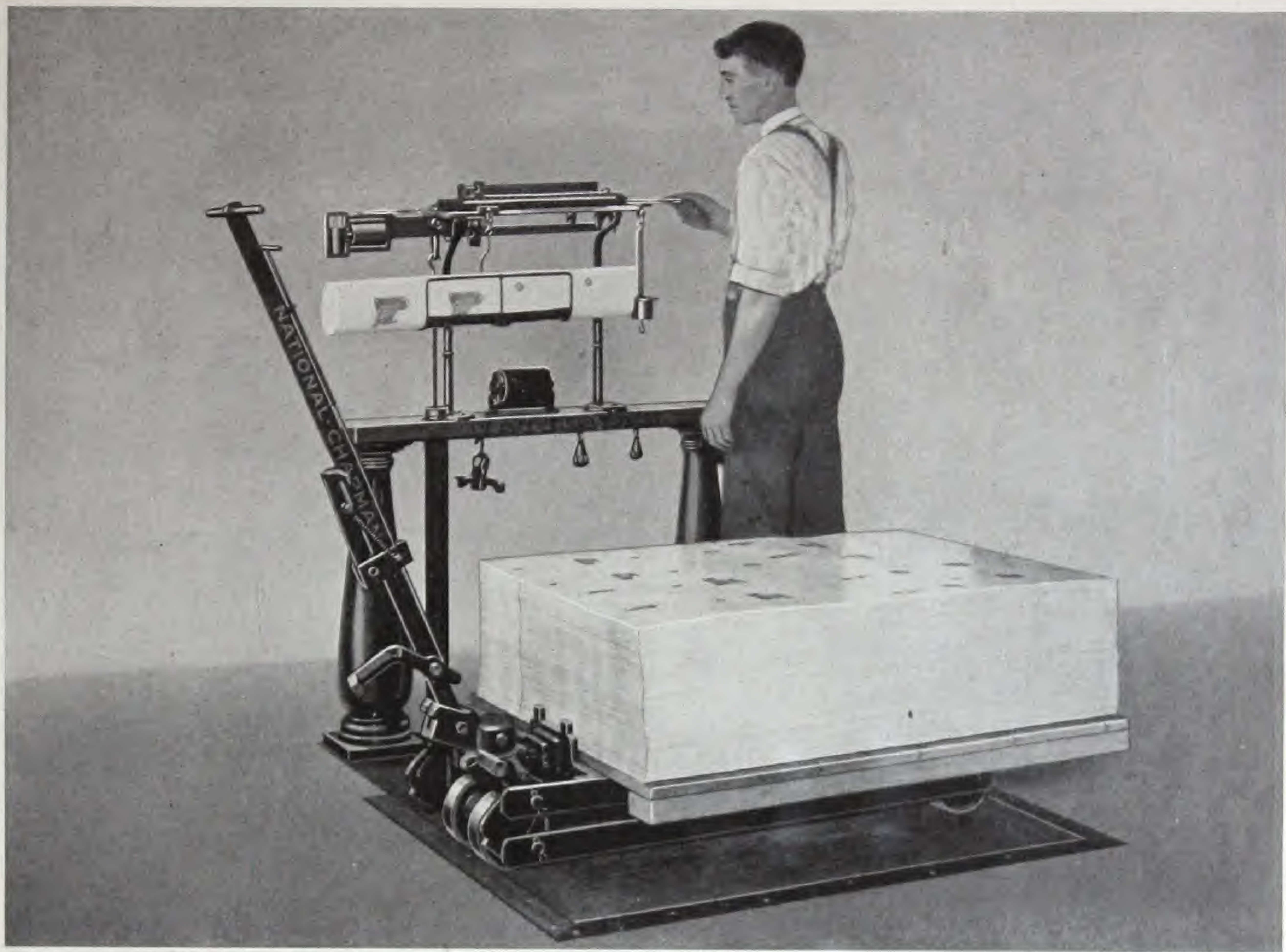
The weight of the pieces in any one load on the platform should not exceed the load capacity of the machine.

In ordering by mail, specify the size, shape, and minimum and maximum weights of the pieces to be counted, that proper receptacles may be furnished as ratio-pans.





# NATIONAL COUNTING AND WEIGHING MACHINES



*A load of printed sheets can be counted on a National Counting Machine without removal from the elevating truck. Photograph taken at Bartlett-Orr Press, New York City.*

## STRUCTURAL FEATURES

**N**ATIONAL COUNTING MACHINES are not only accurate and practical counting devices, but are also weighing machines of unexcelled accuracy and durability. Only the best of materials are used in these machines and the workmanship, design and finish are of highest grade.

The major parts of the head are of brass, polished and heavily plated, while all other metal parts are finished in enamel. The head bearings on all machines are of agate, well protected. They positively will neither rust nor wear out in a lifetime of service. Agate is nearly as hard as diamond, much harder than the best tempered steel. It is used exclusively where extreme accuracy is desired and friction must be avoided, adding to the sensitiveness and life of the machine. The steel pivots and hardened bearings are made of the best quality of steel procurable. All portable machine platforms are made of iron, and Dormant Machine platforms have solid iron frames with steel covered centres. Dormant platforms are fitted with bearing balls, making it impossible to throw the platform from its bearings with the thrust of a heavy load. All machines are tested with U. S. standard weights.

Both in counting or in weighing National Counting Machines are extremely sensitive, without being in any way delicate or fragile.

We manufacture Counting and Weighing Machines for all countries and equip them to operate under any desired standards.





## NATIONAL COUNTING AND WEIGHING MACHINES

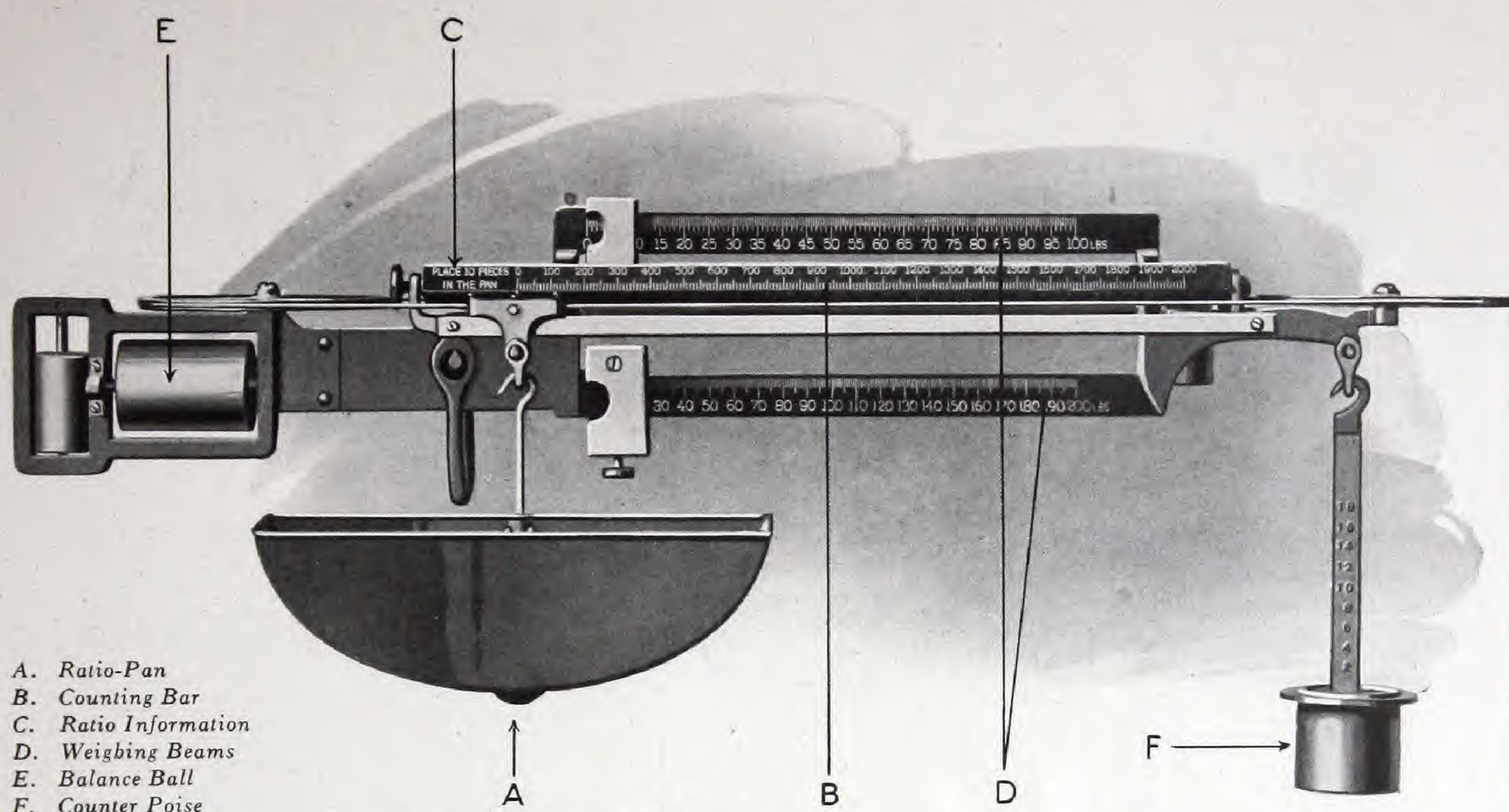


**I**N this plant Dormant Type National Counting Machines accurately count bolts by the barrel full or wheelbarrow load. Graham Nut Co., Neville Island, Pa.





# NATIONAL COUNTING AND WEIGHING MACHINES



Beam of The National Counting Machine

## HOW TO COUNT

**T**O obtain the count of the contents of a box, or other package: First, set out the tare of the package on either one of the weighing beams. From the contents of the package, place in the ratio-pan on the counting bar the number of pieces required, as indicated by directions given on the bar. Move the pan along the bar until the beam is in balance. The indicator above the pan will then denote upon the counting bar the exact number of pieces contained in the package. Where it is desired to count in lots of a specified number, say 1,000, set out the tare of the box or package, if one is used, set the indicator on the 1,000 mark, place the required number of pieces in the ratio-pan, fill the package until the beam is in balance, and 1,000 will be the number of pieces in the package.

*Please note that the pieces placed in the ratio-pan are not weighed, nor is it necessary to know the weight of individual pieces at any time. It is also to be noted that the count obtained on the bar covers the platform load only — not the pieces in the ratio-pan.*

The counting capacity of any machine is limited only to its load capacity. By doubling or multiplying the number of pieces placed in the ratio-pan, the capacity of the counting bar is similarly doubled or multiplied. By this method a machine with a counting capacity of 10,000 pieces may be made to count into the hundreds of thousands, provided the load capacity of the machine is not exceeded.

Where weight is required in addition to count, it is obtained in the same manner as upon any weighing machine. The position of the ratio-pan, when empty, does not interfere with weighing, but when any material is in the pan it must either be removed or the pan set at zero. With the pan at zero, it may be empty or filled, or may be removed entirely, without affecting the balance.

National Counting Machines are often used to count material which does not run in uniform weights, such as rough castings, etc. This is accomplished by making slight changes in the number of pieces placed in the ratio-pan, to cover the variation in the material being handled.





# NATIONAL COUNTING AND WEIGHING MACHINES



Barge Shape—Style A



Clamp



Open End—Style B

## RATIO-PANS AND CLAMPS

SCALE OF MEASUREMENTS IN INCHES

No. of Machine	BARGE SHAPE A			OPEN END B			OBLONG D			CLAMP
	L.	W.	D.	L.	W.	D.	L.	W.	D.	
91	3¼	3	2							Clamps are made in the form of a vise-jaw, in various sizes, suitable for different classes of work. They are used for holding sheet-metal, stationery, and articles too large to place in regular ratio-pans.
95	3¼	3	2							
96	8½	3½	2¾							
97	6½	3	2¼	8½	3½	1½	8¼	3	2½	
97½	11	4	3½	13	5	2	13	3¼	2½	
98	11	4	3½	13	5	2	13	3¼	2½	
99	11	4	3½	13	5	2	13	3¼	2¾	
201	11	4	3½	13	5	2	13½	5	2¾	
202	11	4	3½	13	5	2	13½	5	2¾	
203	11	4	3½	13	5	2	13½	5	2¾	
300	11	4	3½	13	5	2	13½	5	2¾	
301	11	4	3½	13	5	2	13½	5	2¾	
302	11	4	3½	13	5	2	13½	5	3½	
100	12½	4¼	4	13	5¼	2	13½	5½	3½	
101	12½	4¾	4	13	5¾	2	13½	5½	3½	
102	12½	4¾	4	13	5¾	2	13½	5½	3½	
103	12½	4¾	4	13	5¾	2	13½	5½	3½	
104	12½	4¾	4	13	5¾	2	13½	5½	3½	
400	12½	4¼	4	13	5¼	2	13½	5½	3½	
Nos. 502 to 506	14½	4½	5	13½	4½	2½	13½	6	3½	

The above table gives standard sizes of ratio-pans. Two ratio-pans are furnished with each machine, excepting numbers 91, 95, 96, which have one pan only. Style "Z" machines furnished with one regular pan, either A, B, or D, as shown above, and one C pan 15½ in. long, 4¾ in. wide, 7 in. deep. Special ratio-pans can be provided to meet unusual requirements.



Platform Scoop

### Special Platform Scoops

We furnish a platform scoop in special size, 28" x 14½" x 9", suitable for handling buttons and similar articles. This is used principally in connection with Nos. 97 and 97½. Additional price.



Basket—Style C for "Z" Models



Oblong—Style D





# NATIONAL COUNTING AND WEIGHING MACHINES



**N**ATIONAL COUNTING MACHINES are being used successfully in factories where the following goods are manufactured, and in Ware and Store houses where many parts and pieces are counted. They have entered more than one hundred industries and are being operated in single units and in groups up to one hundred machines or more to a single firm.

Adding Machines	Dairy Supplies	Metal Ware	Screws
Advertising Matter	Dental Supplies	Meters	Sewing Machines
Agricultural Implements	Drop Forgings	Motors	Ship Supplies
Aluminum Goods	Electrical Goods	Musical Instruments	Shoe Findings
Automobiles	Electrical Railways	Needles	Soap
Baby Carriages	Elevators	Novelties	Specialties
Badges	Enamel Ware	Oiling Devices	Spokes and Nipples
Bicycles	Firearms	Oil Well Supplies	Springs
Bobbins and Shuttles	Fire Extinguishers	Optical Goods	Stationery
Bolts and Nuts	Fixtures	Organs	Steel
Boxes	Furniture	Paper	Stoppers
Brass Goods	Glass	Photographic Supplies	Stoves
Builders' Hardware	Hardware Specialties	Piano Actions	Taps and Dies
Buttons	Hooks and Eyes	Pills and Tablets	Telegraph Material
Cameras	Iron	Pins	Telephones
Cash Carriers	Jewelry	Platings	Tin Ware
Cash Registers	Keys	Plows	Tools
Casters	Knives	Plumbers' Supplies	Toys
Celluloid	Lamps	Porcelains	Trunks
Chemicals	Liquids	Printing Presses	Typewriters
Chewing Gum	Lock Nuts	Printed Matter	Wagons
Clocks	Locks	Proprietary Medicines	Watch Cases
Collars	Locomotives	Pumps	Watches
Combs	Lubricator Cups	Regalias	Wire Goods
Composition Goods	Machinery	Rings	Wooden Ware
Crayons	Malleable Iron	Rivets	Wringers
Cork	Matches	Rubber Goods	Zinc Ware
Cutlery	Metal Stampings	Sanitary Ware	

Special lists of users in any line will be forwarded on request

## GUARANTEE

**N**ATIONAL COUNTING AND WEIGHING MACHINES are guaranteed for ONE YEAR from DATE of purchase against flaws in material and imperfections in workmanship, and we will replace WITHOUT CHARGE any defective parts, which may be returned to us within said period.

NATIONAL SCALE COMPANY

All Shipments of Counting and Weighing Machines made  
F. O. B. CHICOPEE FALLS, MASS.





## NATIONAL COUNTING AND WEIGHING MACHINES



THESE casters would have to be counted singly, if counted by hand. The National Counting Machine accurately counts them by the barrel full. Photograph taken at Universal Caster & Foundry Co., Newark, N. J.





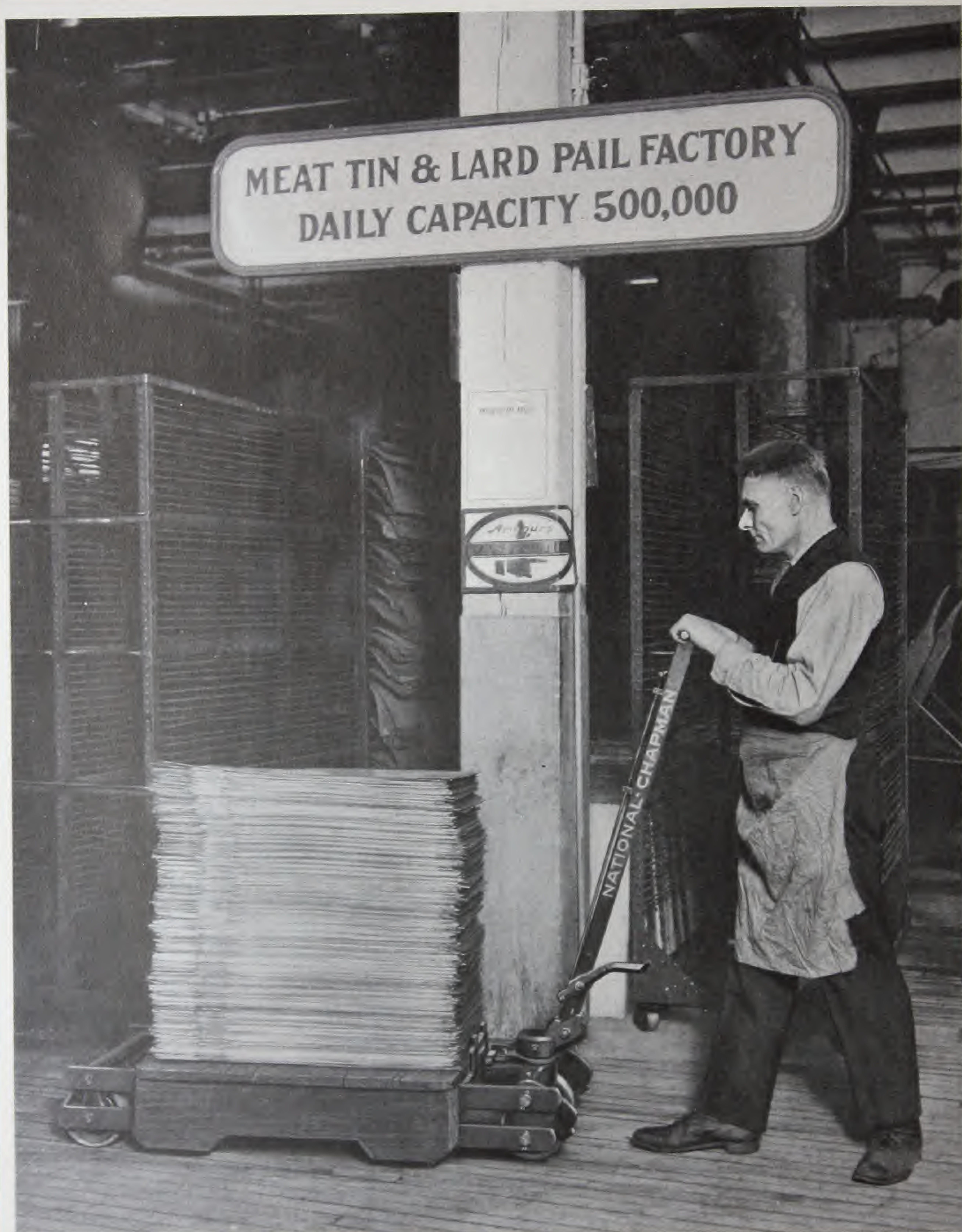
**NATIONAL-CHAPMAN  
ELEVATING  
TRUCKS**







# NATIONAL-CHAPMAN ELEVATING TRUCKS



**H**ANDLING 3000 lbs. of Tin Plate on a National-Chapman Elevating Truck in the Meat Packing Plant of Armour & Co., Chicago, Ill.





## THEIR COST CUTTING ADVANTAGES

**I**T has repeatedly been proven by tests that the old fashioned method of shop trucking with fixed-platform trucks wastes fully 75% of the operators' time. This is true for the reason that these trucks require loading by hand and continual unloading again to keep them in service.

The basic idea back of the National-Chapman Elevating Truck is the absolute divorcement of running gear and load platform and the utilization of a large number of detached wooden skids, which can readily be built in any factory carpenter shop.

The National-Chapman makes each one of these skids serve the purpose of a many times more expensive platform truck, besides providing a means by which material in process of manufacture may be routed through the plant from department to department and machine to machine with little or no handling on the part of the operator. Incoming stock, finished and unfinished stores or goods in shipping or storage rooms can be placed on and remain on skids and be shifted from place to place with a minimum of handling.

Perhaps the National-Chapman Elevating Truck can best be described as a trucking "switch engine," having all the economical advantages of its big brother of the railroad.

It will readily be appreciated that the National-Chapman System of Trucking cannot help but have a very definite influence on production through its quicker, more efficient service to machines. In addition, the unusual adaptability of the skid idea to many forms of convenient racks, crates, containers, etc., machine high or otherwise, does much to reduce the number of time consuming motions in handling material on the machines.

Platforms are cheap, labor cost is ever growing. National-Chapman Elevating Trucks have enabled hundreds of manufacturers to multiply inexpensive platforms instead of fixed-platform trucks and to save the labor cost of from one to three men or more for each National-Chapman Elevating Truck installed.

On the following pages we describe National-Chapman Elevating Trucks in detail, their various sizes, and their structural and mechanical advantages.





## Standard Model

**T**HE NATIONAL-CHAPMAN ELEVATING TRUCK is a specially constructed, roller-bearing chassis with powerful side bars, the top bars being the lifting bars.

When the truck is rolled under a loaded wooden skid, and the handle is thrust downward, the lifting bars raise skid and load off the floor, ready for hauling away.

When elevated, the supporting bars assume a fixed position and remain rigidly locked together until released by a pull on the rod attached to the handle, which is known as the Handle Release Lever, or by use of the "kick off" lever attached to the chassis. In descending, a powerful hydraulic check eases the heaviest load to the floor without a jar or damage to material or floor. The truck is then pulled out from under the skid and is ready for another load.

The Standard Model National-Chapman Elevating Truck is built in 12 sizes with carrying capacities ranging from 2000 to 4000 lbs.

See page 30 for a description of the special mechanical features embodied in National-Chapman Elevating Trucks, also a table showing the various sizes and capacities. Platform dimensions are shown on page 31.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



## D Model

THE only structural difference between the National-Chapman Elevating Truck, D Model, and the Standard Model is in the width of the truck at the front. On the D Model this width is uniformly 17 inches, regardless of changing rear widths. On the Standard Model the front width is always the same as the rear width. As on the Standard Model, the D Model has the head construction which enables the front wheels to turn in a complete circle if desired, a great convenience when the truck is working in narrow aisles.

The method of frame construction on the D Model has effected certain economies in manufacturing so that there is a slight modification in the price on some sizes, as compared with the Standard Model.

The D Model is made in seven sizes and capacities. These are identical with the sizes and capacities of Standard sizes of the following numbers: Nos. 4, 4A, 5, 6, 6A, 7 and 8, which are shown in the table on page 30. Platform dimensions are shown on page 31.





## National-Chapman Scale-Elevating Truck

**T**HIS is a complete National-Chapman Elevating Truck, into which is built an accurate National Beam Scale.

In Shipping, Receiving, Stock or Store Rooms the National-Chapman Scale-Elevating Truck not only transfers and stores raw material or merchandise with great speed and labor saving economy, but it completely eliminates the necessity of transferring loads to separate scales for weighing.

Material loaded on wooden skids can be accurately weighed *while resting on the truck* and gross, net and tare weights quickly determined.

The Scale-Elevating Truck is equipped with a safety handle release in addition to the "kick off" lever, and a powerful hydraulic check, which automatically lowers the heaviest load without a jar. Hyatt Roller Bearings are used throughout. Axles are heat treated.

When transporting material, the loaded platform is supported on a special set of side bars, so that there is no strain on the scale mechanism.

The Scale-Elevating Truck is built in seven regular sizes, known as Nos. 1-1B-2-3-5-6A and 8. The dimensions and capacities of each are identical with those of the Standard Elevating Trucks of corresponding number. See table on page 30. Approximate shipping weights: — No. 1, 400 lbs.; No. 1B, 450 lbs.; No. 2, 500 lbs.; No. 3, 550 lbs.; No. 5, 650 lbs.; No. 6A, 700 lbs.; No. 8, 800 lbs.

For Platform Dimensions see Page 31



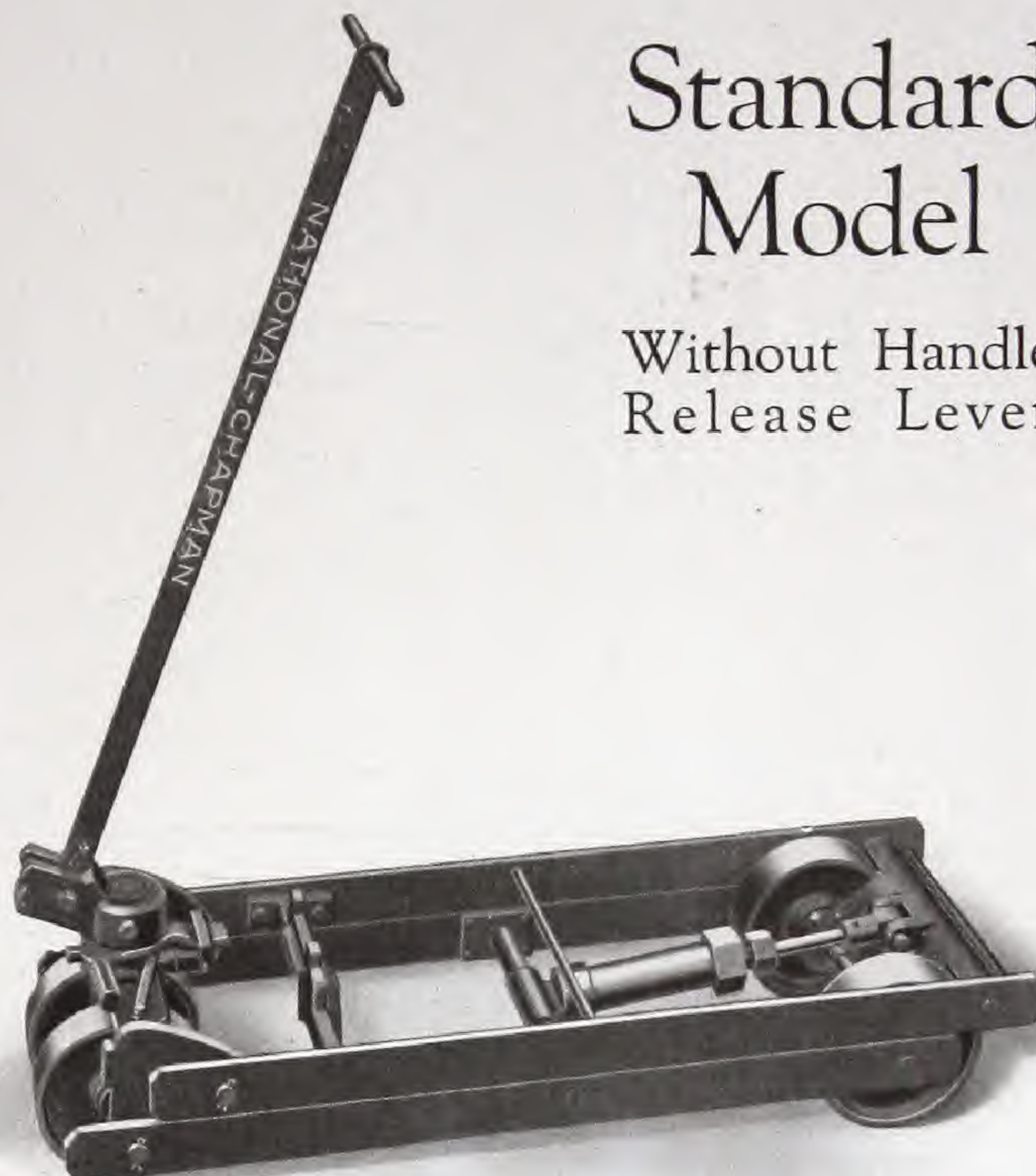




# NATIONAL-CHAPMAN ELEVATING TRUCKS



**T**HE Handle Release Lever, by a pressure of the hands exerted at the extreme end of the handle bar, unlocks the check, thus causing the load to descend to the floor. The Standard Model National-Chapman Elevating Truck is equipped with both the Handle Release Lever and a "Kick Off" lever. The latter may be seen on the illustration, immediately over the right front wheel. Standard Model Trucks are furnished with or without the Handle Release Lever, as desired.

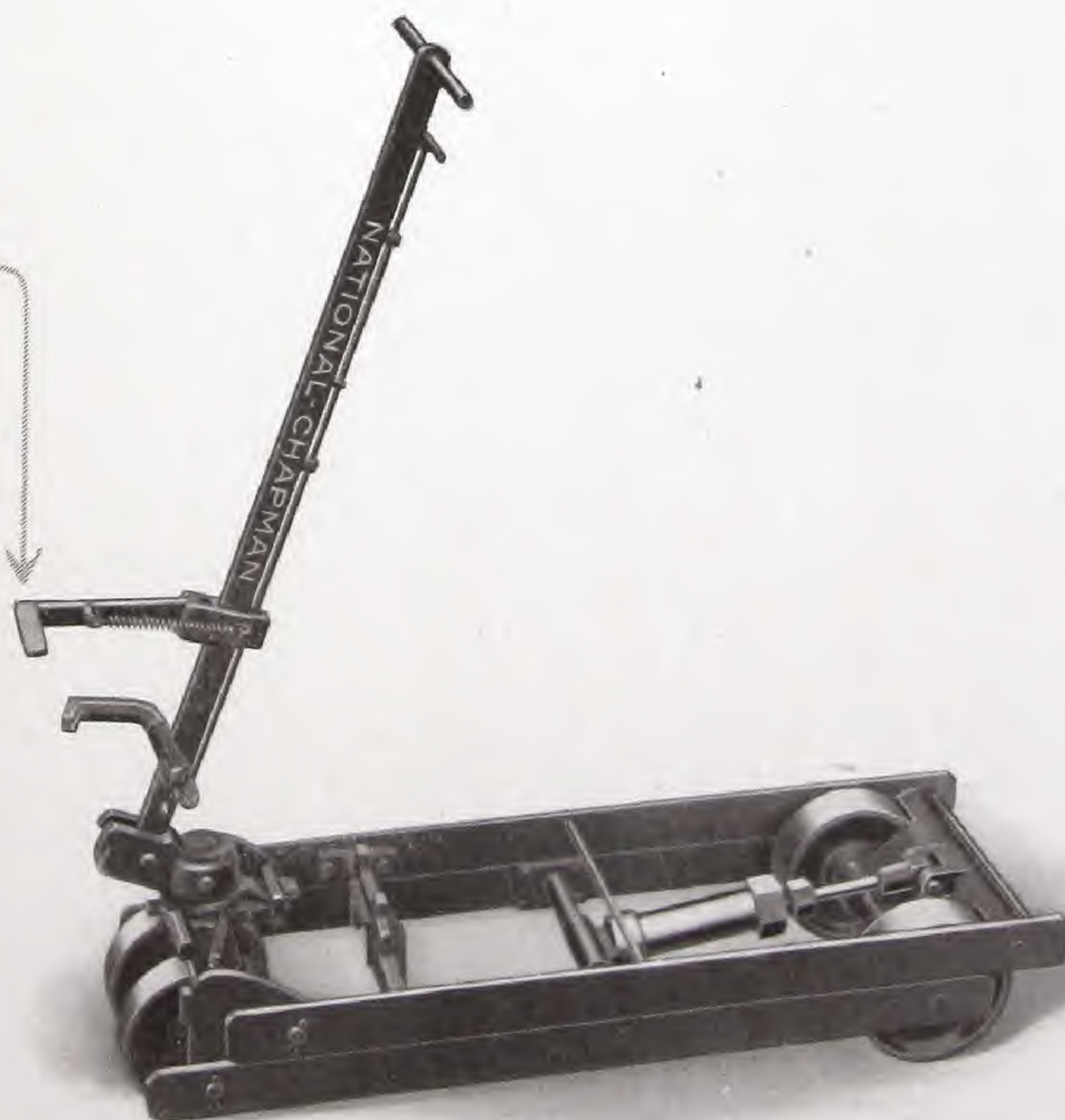


## Standard Model

Without Handle Release Lever

## THE GIANT LIFT

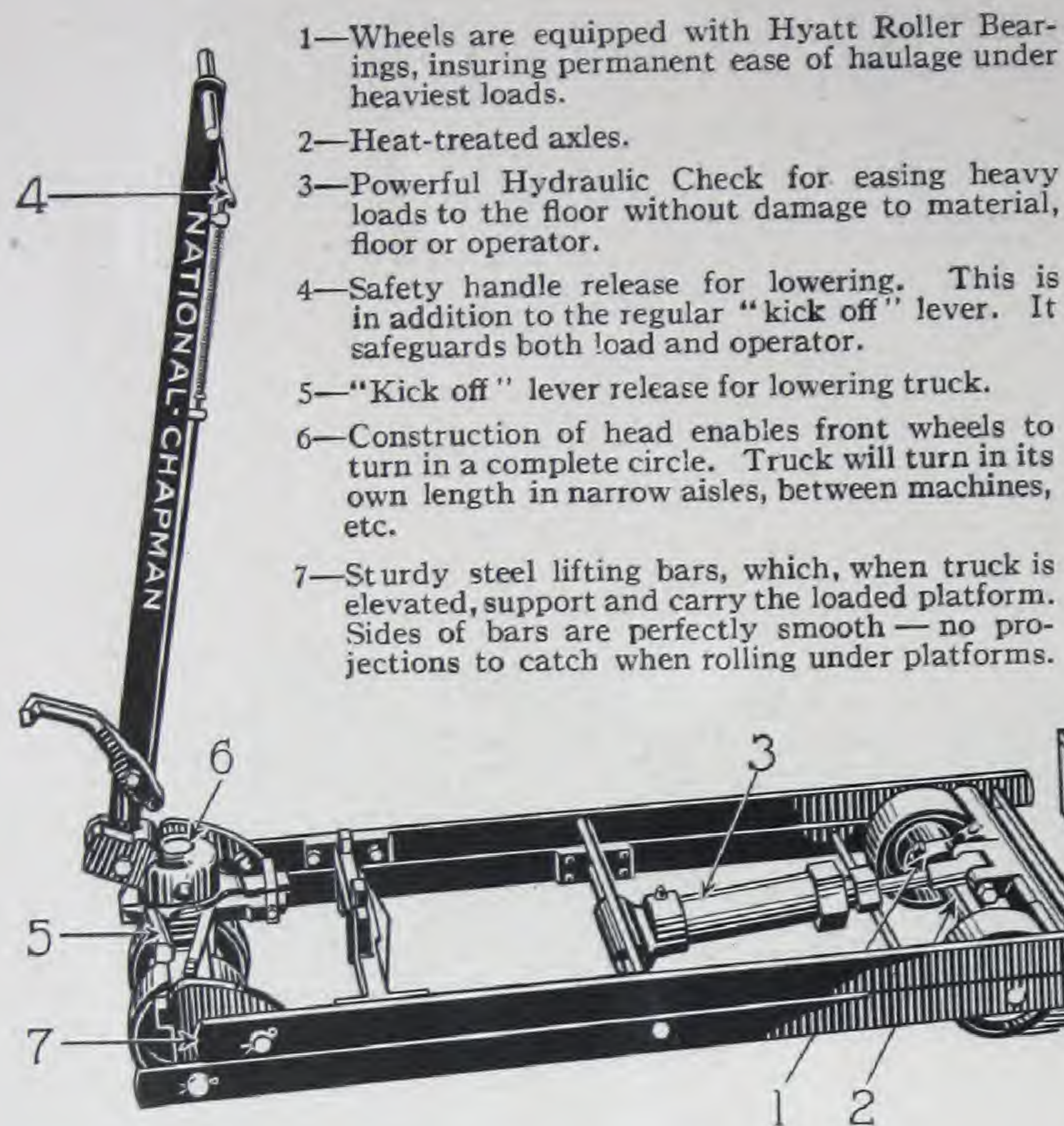
**T**HE "Giant" Lift increases leverage 50% or more and is found extremely convenient and useful. It is furnished as standard equipment on all National-Chapman Elevating Trucks except Nos. 1 and 4. When not in use the "Giant" Lift is folded against the handle.





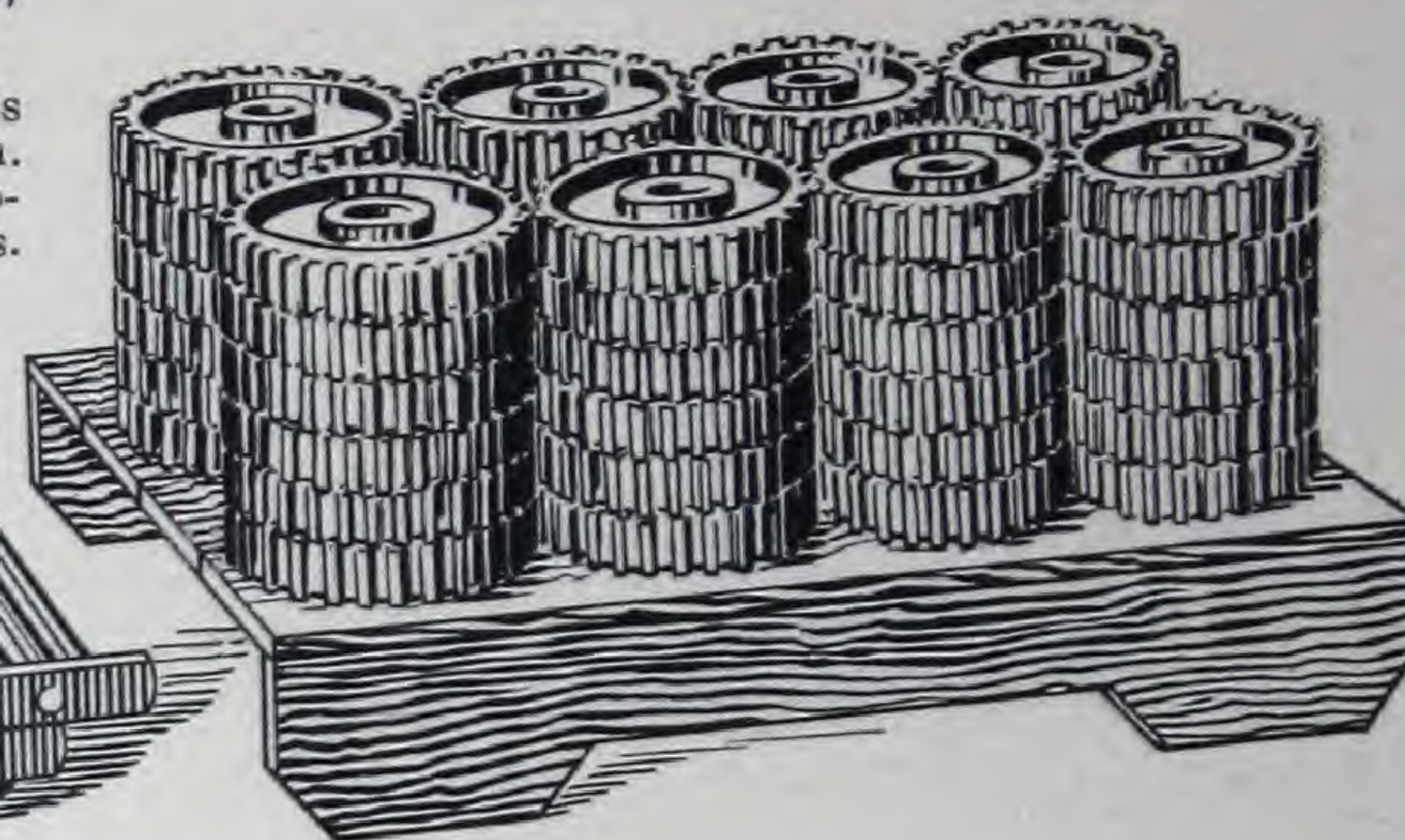
# NATIONAL-CHAPMAN ELEVATING TRUCKS

## SPECIAL MECHANICAL FEATURES



- 1—Wheels are equipped with Hyatt Roller Bearings, insuring permanent ease of haulage under heaviest loads.
- 2—Heat-treated axles.
- 3—Powerful Hydraulic Check for easing heavy loads to the floor without damage to material, floor or operator.
- 4—Safety handle release for lowering. This is in addition to the regular "kick off" lever. It safeguards both load and operator.
- 5—"Kick off" lever release for lowering truck.
- 6—Construction of head enables front wheels to turn in a complete circle. Truck will turn in its own length in narrow aisles, between machines, etc.
- 7—Sturdy steel lifting bars, which, when truck is elevated, support and carry the loaded platform. Sides of bars are perfectly smooth—no projections to catch when rolling under platforms.

THIS truck is designed on correct mechanical principles. It is built of high grade materials by workmen skilled in the manufacture of precision machinery and devices. In structural strength it has a margin of safety well above catalog rating. It is a clean cut, well finished, handy truck, built to stand up under rough usage and every day service.



SIZES, DIMENSIONS AND CAPACITIES OF ALL NATIONAL - CHAPMAN ELEVATING TRUCKS

Sizes	Extreme Length Raised Position	Extreme Width of Truck	Length Skid-stop to Rear	Height of Truck Raised	Height of Truck Lowered	Wheels	Width of Front Wheels	Width of Rear Wheels	Clearance Side Bars from Floor	Capacity	Shipping Weight of Trucks
1	50"	17"	37 1/2"	7 5/8"	6"	6"	2"	2 3/8"	2 1/8"	2,500 lbs.	250 lbs.
1A	50"	17"	37 1/2"	8 3/8"	6"	6"	2"	2 1/2"	2 1/4"	2,500 lbs.	250 lbs.
1B	50"	17"	37 1/2"	7 5/8"	6"	6"	2"	2 3/8"	2 1/8"	4,000 lbs.	275 lbs.
2	50"	17"	37 1/2"	8 7/8"	7"	7"	2 1/4"	2 3/4"	2 1/2"	3,500 lbs.	297 lbs.
3	51"	17"	37 1/2"	11 1/4"	9"	9"	2"	2 1/2"	3 1/4"	2,000 lbs.	356 lbs.
4	50"	24"	37 1/2"	7 5/8"	6"	6"	2"	2 1/2"	2 1/8"	2,500 lbs.	310 lbs.
4A	50"	24"	37 1/2"	8 3/8"	6"	6"	2"	2 1/2"	2 1/4"	2,500 lbs.	310 lbs.
5	50"	24"	37 1/2"	8 7/8"	7"	7"	2 1/4"	2 3/4"	2 1/2"	3,500 lbs.	339 lbs.
6	51"	24"	37 1/2"	11 1/4"	9"	9"	2"	2 1/2"	3 1/4"	2,000 lbs.	410 lbs.
6A	51"	24"	37 1/2"	10 5/8"	9"	9"	2"	2 1/2"	4 7/8"	4,000 lbs.	415 lbs.
7	50"	30"	37 1/2"	8 7/8"	7"	7"	2 1/4"	2 3/4"	2 1/2"	3,000 lbs.	409 lbs.
8	51"	30"	37 1/2"	10 5/8"	9"	9"	2"	2 1/2"	4 7/8"	4,000 lbs.	440 lbs.

Note: — National-Chapman Elevating Trucks of 4,000 lbs. capacity, also Nos. 5, 6 and 7 are equipped with two Hydraulic Checks. All other sizes are equipped with one Check.

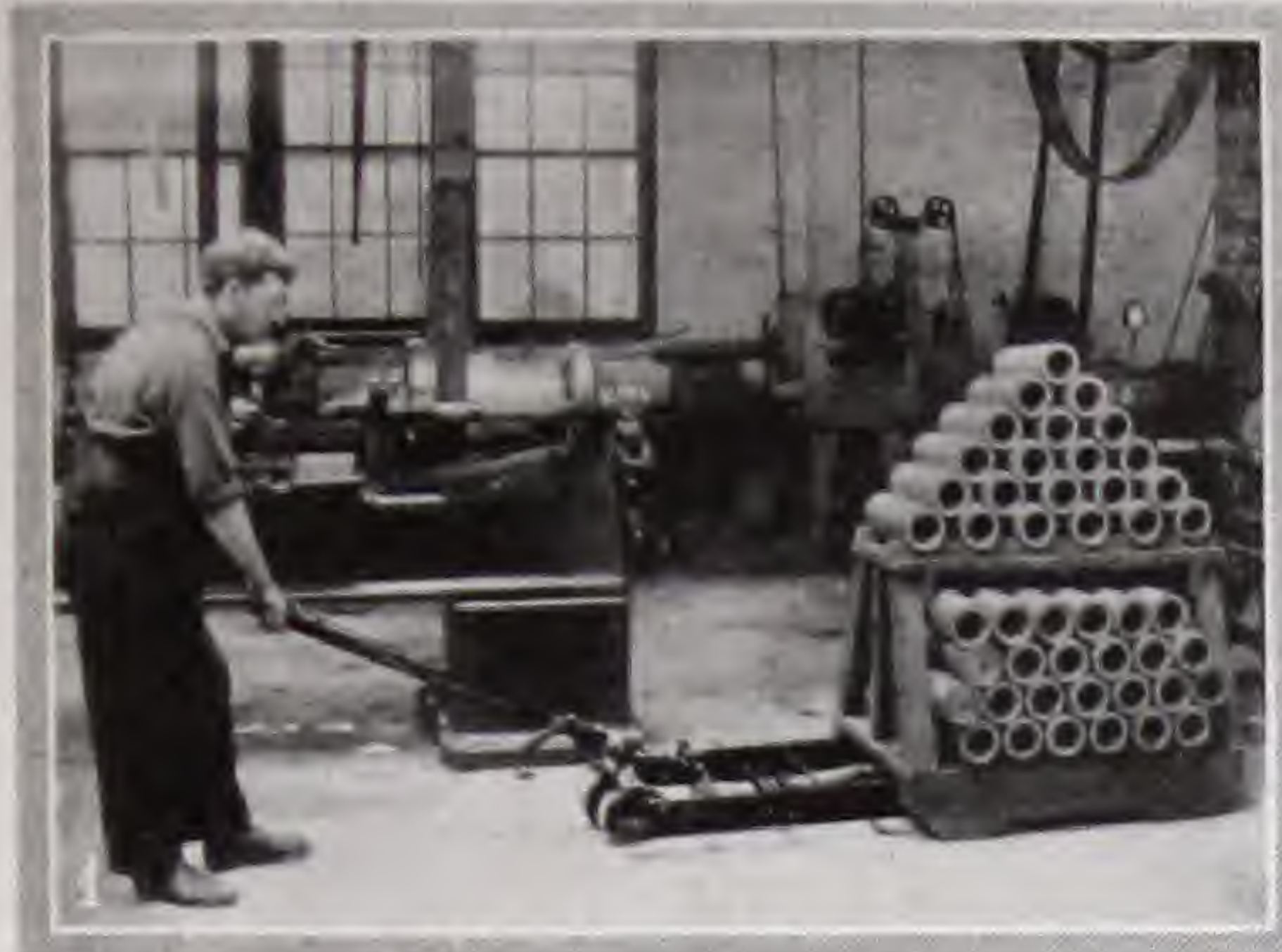
Hyatt Roller Bearings and heat-treated axles are standard equipment in all trucks

For Platform Dimensions See Page 31



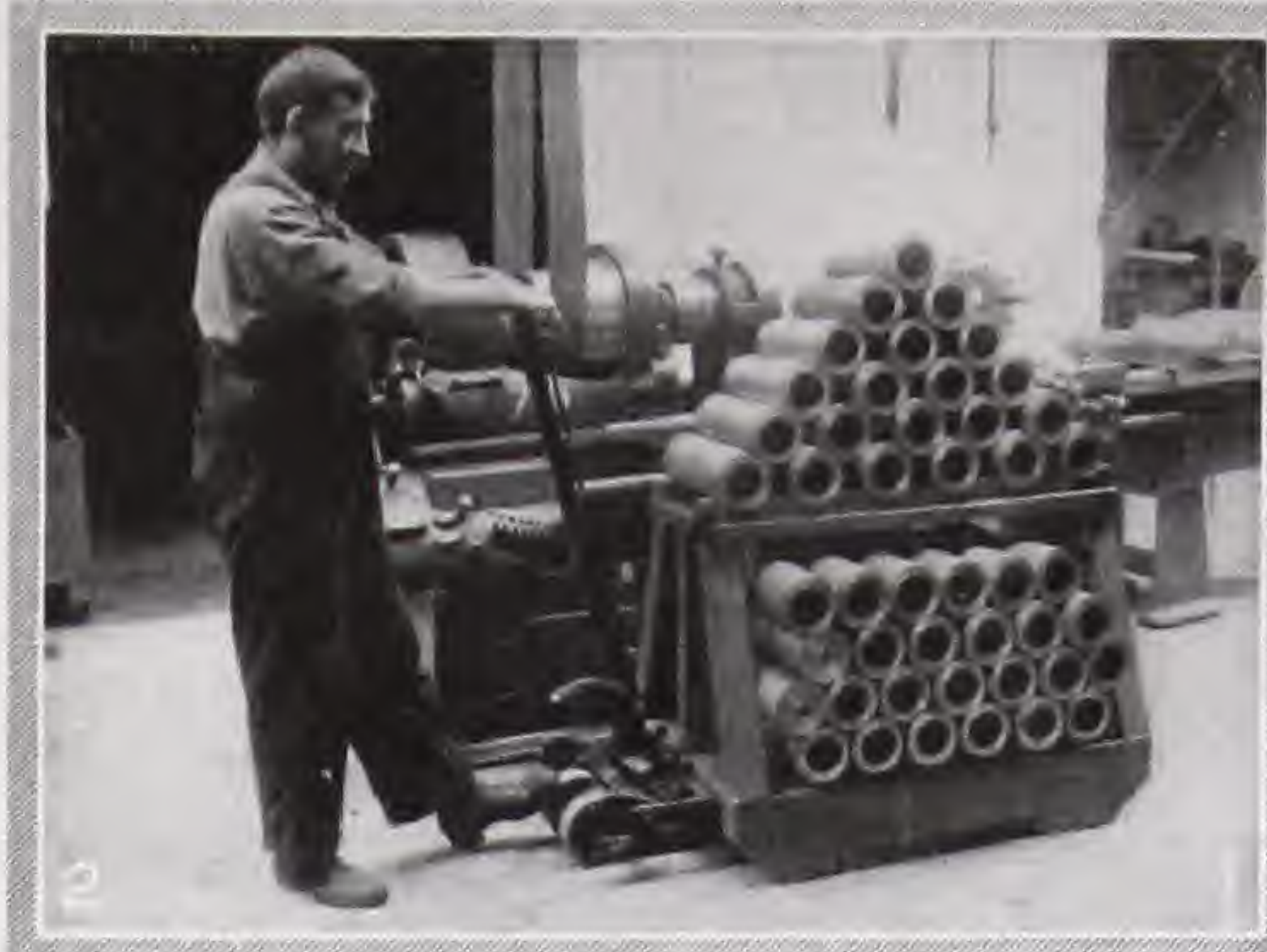


# NATIONAL-CHAPMAN ELEVATING TRUCKS

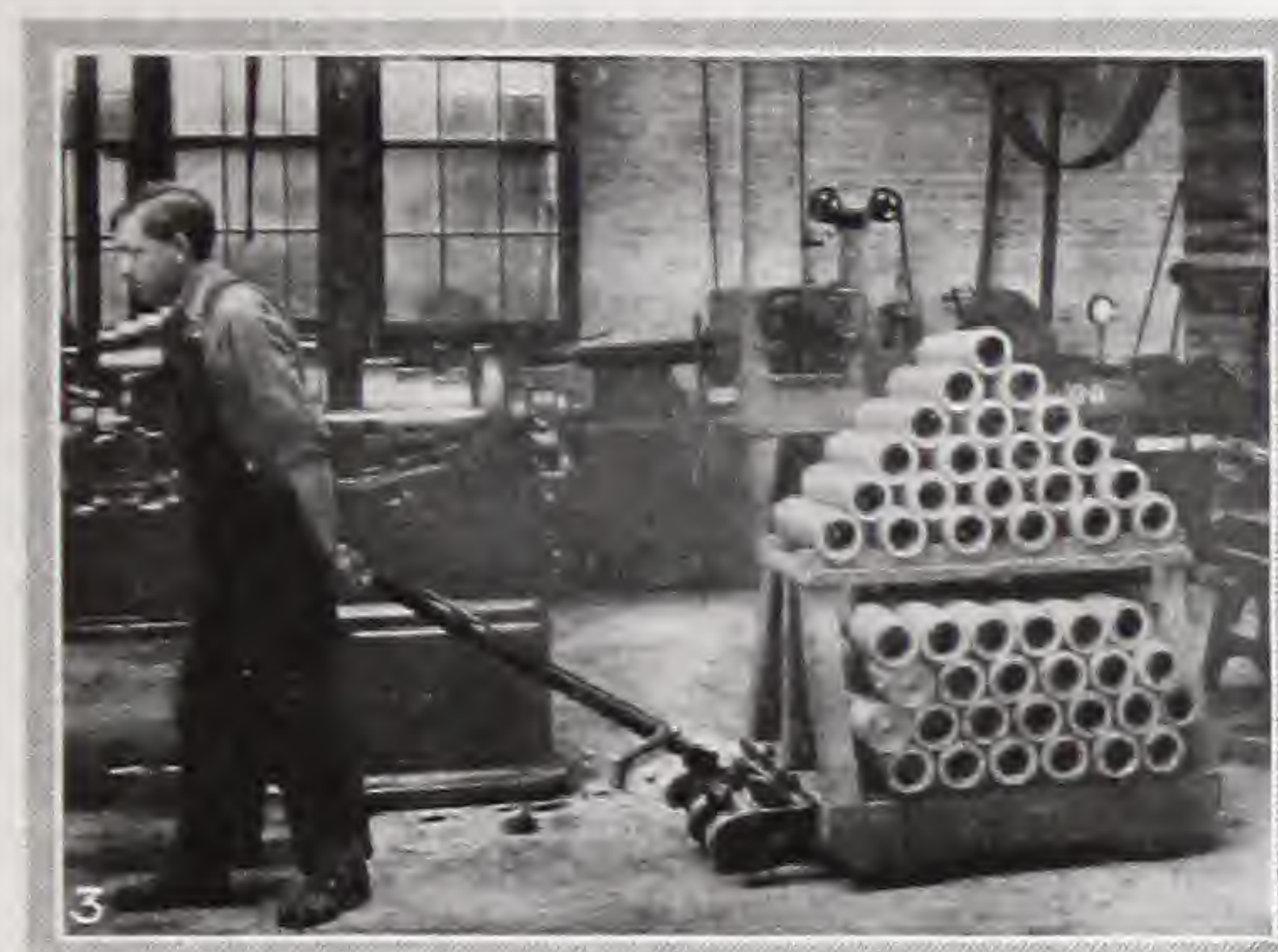


1—Rolling the truck under the loaded platform

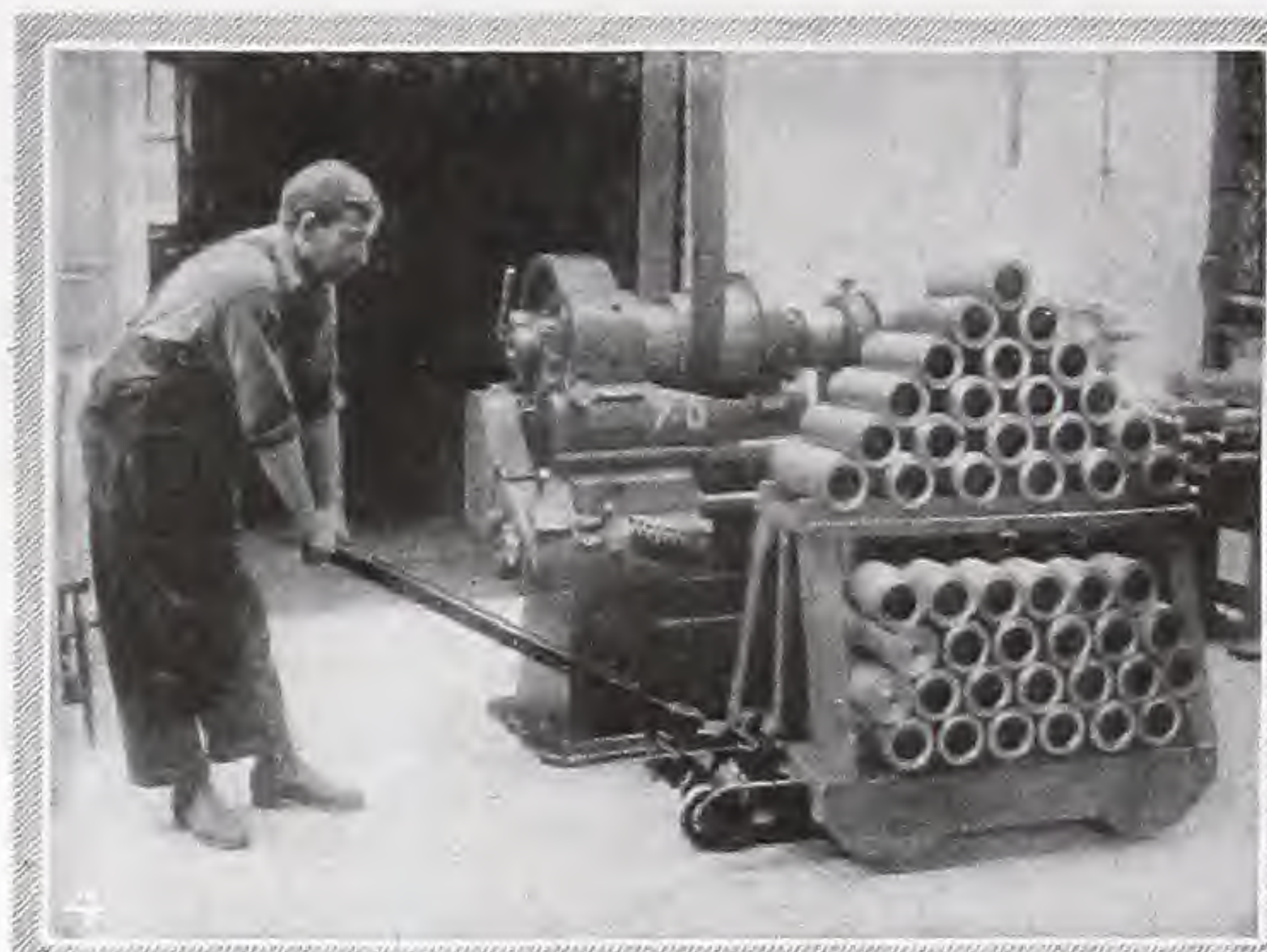
How  
to  
Operate  
National-  
Chapman  
Elevating  
Trucks



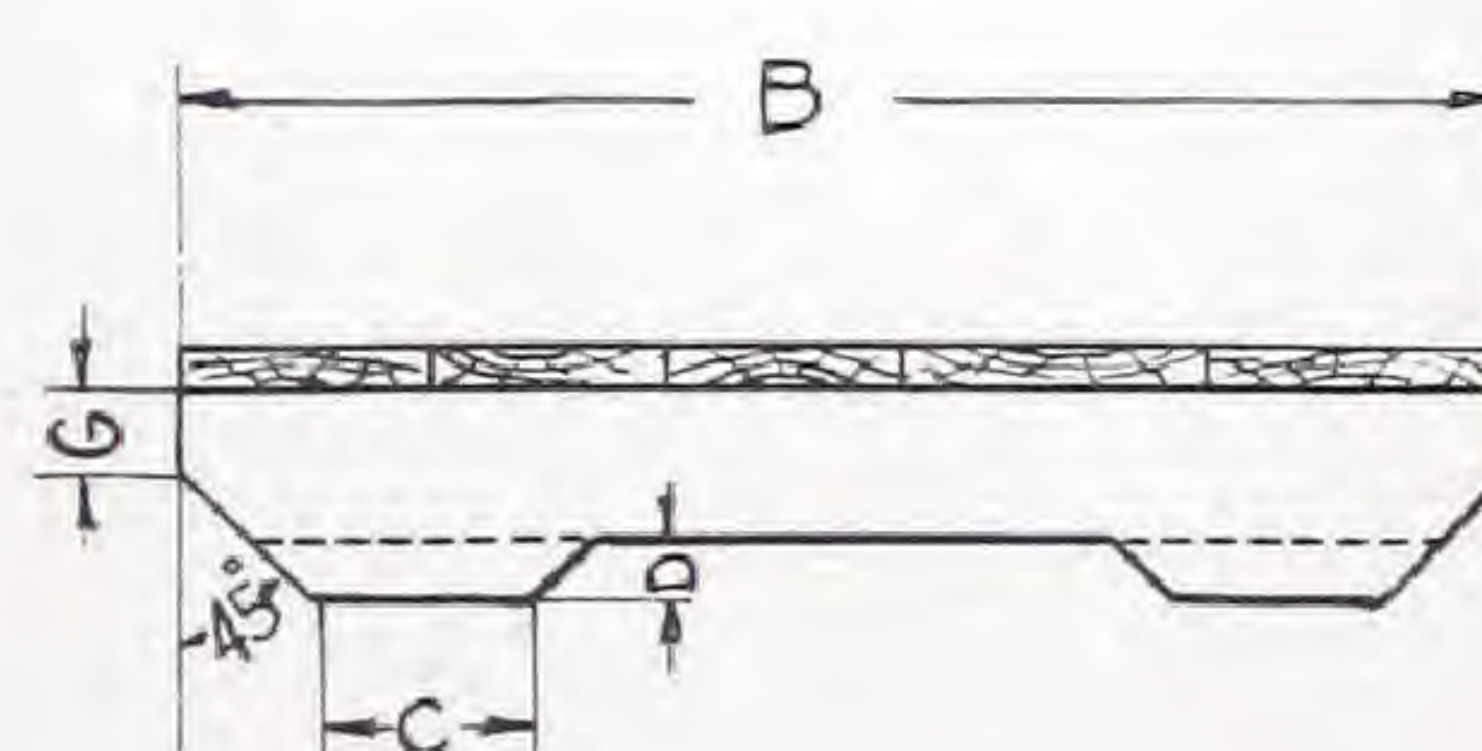
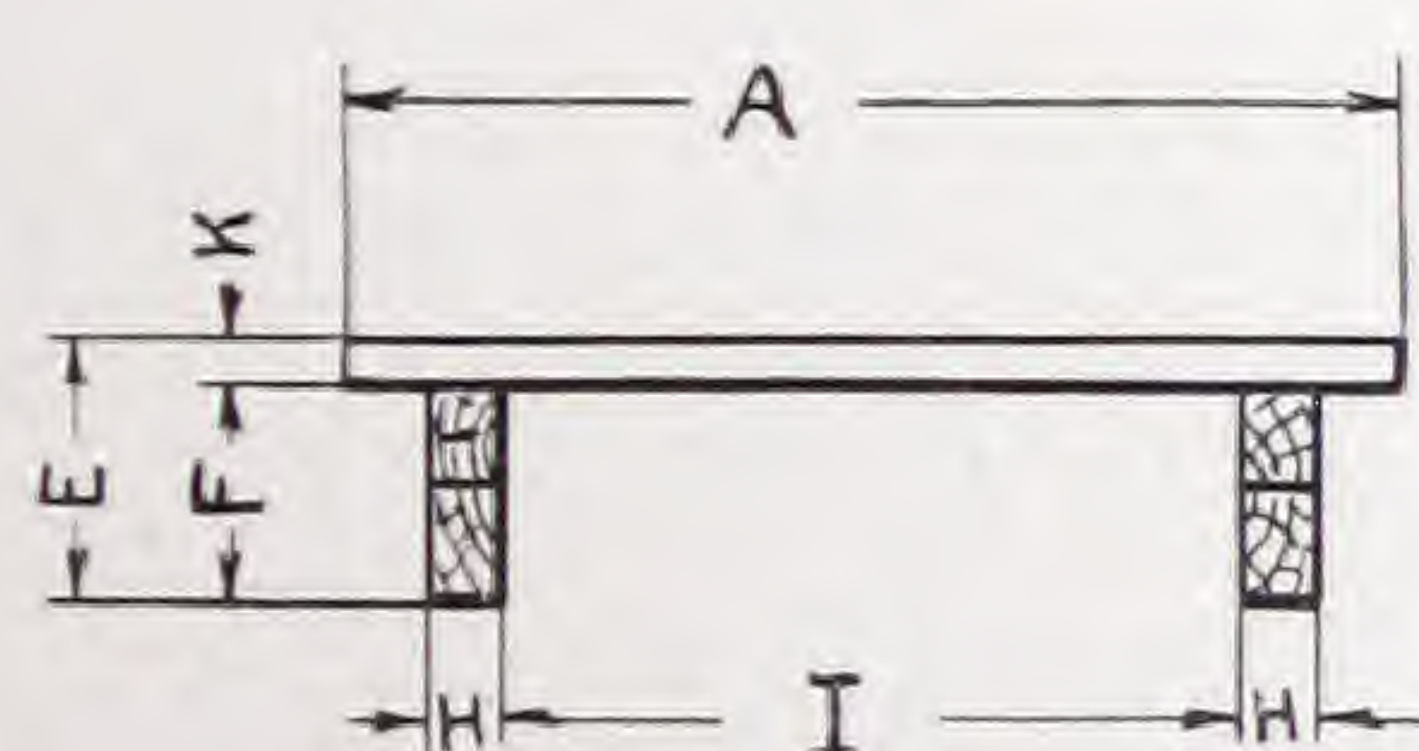
2—Elevating the truck by a downward thrust of the handle



3—An easy haul to destination



4—Lowering the load at destination without effort and without a jar



PLATFORM PLAN AND DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G	H	I	K
1	28	38	6	2	7 $\frac{5}{8}$	6 $\frac{3}{8}$	2 $\frac{1}{2}$	2	20 $\frac{1}{2}$	1 $\frac{1}{4}$
1A	28	38	6	2	7 $\frac{5}{8}$	6 $\frac{3}{8}$	2 $\frac{1}{2}$	2	20 $\frac{1}{2}$	1 $\frac{1}{4}$
1B	28	38	6	2	7 $\frac{5}{8}$	6 $\frac{3}{8}$	2 $\frac{1}{2}$	2	20 $\frac{1}{2}$	1 $\frac{1}{4}$
2	28	38	6	2	8 $\frac{5}{8}$	7 $\frac{3}{8}$	3 $\frac{1}{2}$	2	20 $\frac{1}{2}$	1 $\frac{1}{4}$
3	28	38	6	2	10 $\frac{5}{8}$	9 $\frac{3}{8}$	4 $\frac{1}{2}$	2	20 $\frac{1}{2}$	1 $\frac{1}{4}$
4	35	38	6	2	7 $\frac{3}{4}$	6 $\frac{3}{8}$	2 $\frac{1}{2}$	2	27 $\frac{1}{2}$	1 $\frac{3}{8}$
4A	35	33	6	2	7 $\frac{3}{4}$	6 $\frac{3}{8}$	2 $\frac{1}{2}$	2	27 $\frac{1}{2}$	1 $\frac{3}{8}$
5	35	38	6	2	8 $\frac{3}{4}$	7 $\frac{3}{8}$	3 $\frac{1}{2}$	2	27 $\frac{1}{2}$	1 $\frac{3}{8}$
6	35	38	6	2	10 $\frac{3}{4}$	9 $\frac{3}{8}$	4 $\frac{1}{2}$	2	27 $\frac{1}{2}$	1 $\frac{3}{8}$
6A	35	38	6	2	10 $\frac{3}{4}$	9 $\frac{3}{8}$	4 $\frac{1}{2}$	2	27 $\frac{1}{2}$	1 $\frac{3}{8}$
7	41	38	6	2	8 $\frac{7}{8}$	7 $\frac{3}{8}$	3 $\frac{1}{2}$	2 $\frac{1}{4}$	33 $\frac{1}{2}$	1 $\frac{1}{2}$
8	41	38	6	2	10 $\frac{7}{8}$	9 $\frac{3}{8}$	4 $\frac{1}{2}$	2 $\frac{1}{4}$	33 $\frac{1}{2}$	1 $\frac{1}{2}$

THE platform dimensions given are neither maximum nor minimum sizes, but can be varied to suit individual requirements.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*Up-to-the-minute shop trucking. A heavy load on a National-Chapman Elevating Truck. Wasson Piston Ring Co., New Brunswick, N. J.*



Hyatt  
Roller  
Bearing

## RELATION OF BEARINGS TO TRUCKING EFFICIENCY

ONE of the primary essentials in a high grade elevating truck is that it shall move heaviest loads under the easy control of one man. This necessitated the best bearings obtainable for use in National-Chapman Elevating Trucks—Hyatt Anti-Friction Roller Bearings.

These bearings are thoroughly adapted to the work, being most rugged in construction and requiring only infrequent oiling. They stand up under the heaviest strains and continuous service.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*A National-Chapman Elevating Truck on duty in a paper warehouse. Union Card & Paper Co., New York City.*

## IMPORTANCE OF PROPERLY ROUTED TRUCKING

**A** STRONG comparison can be drawn between conditions on the modern battle front and conditions in the shop.

The modern battle often is won largely through efficiency of transport behind the lines.

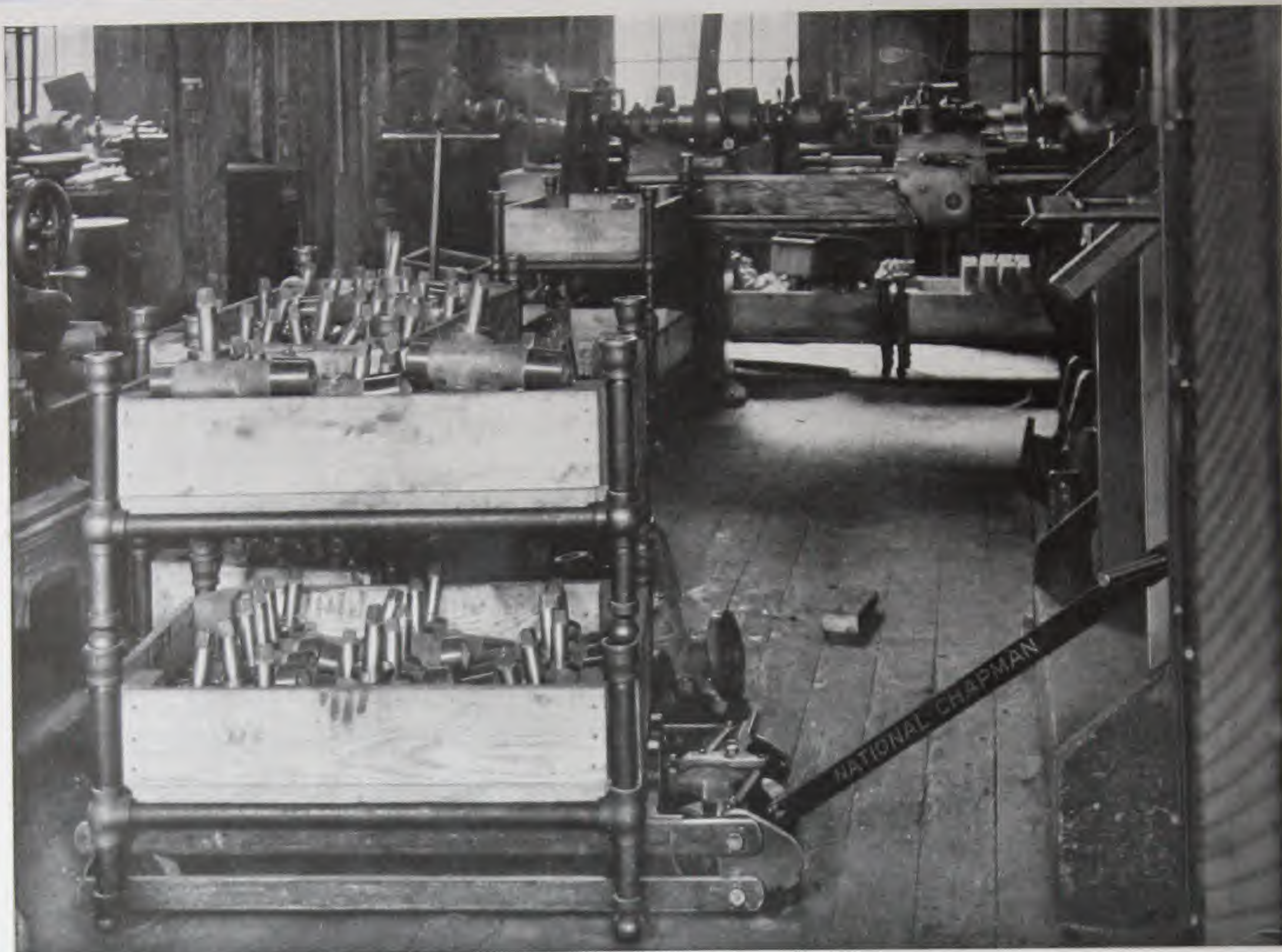
Just so the modern National-Chapman Elevating Truck, with a minimum of manual labor, makes it possible to place material precisely where it is wanted at precisely the time it is wanted, whether it be in receiving, store or shipping rooms or at machines.

The economic advantages of the National-Chapman Elevating Trucking System are apparent even under unfavorable conditions of shop management. It is positively revolutionary, however, in its money saving possibilities where time studies are made of trucking conditions and the number of trucks required in each department is carefully estimated and efficient working routes are established and maintained.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*Showing a novel type of container in units which may be pyramided. This efficient handling method is made possible by use of National-Chapman Elevating Trucks. Homestead Valve Mfg. Co., Homestead, Pa.*

## NEW WAYS OF MAKING SKIDS REDUCE HANDLING COSTS

THE economic practice of keeping material on skids from the time it enters the plant in raw or unfinished condition, through the various processes of machining and finishing, and then into the shipping or storage rooms for final disposal, is the recognized basic theory back of the use of skids and National-Chapman Elevating Trucks.

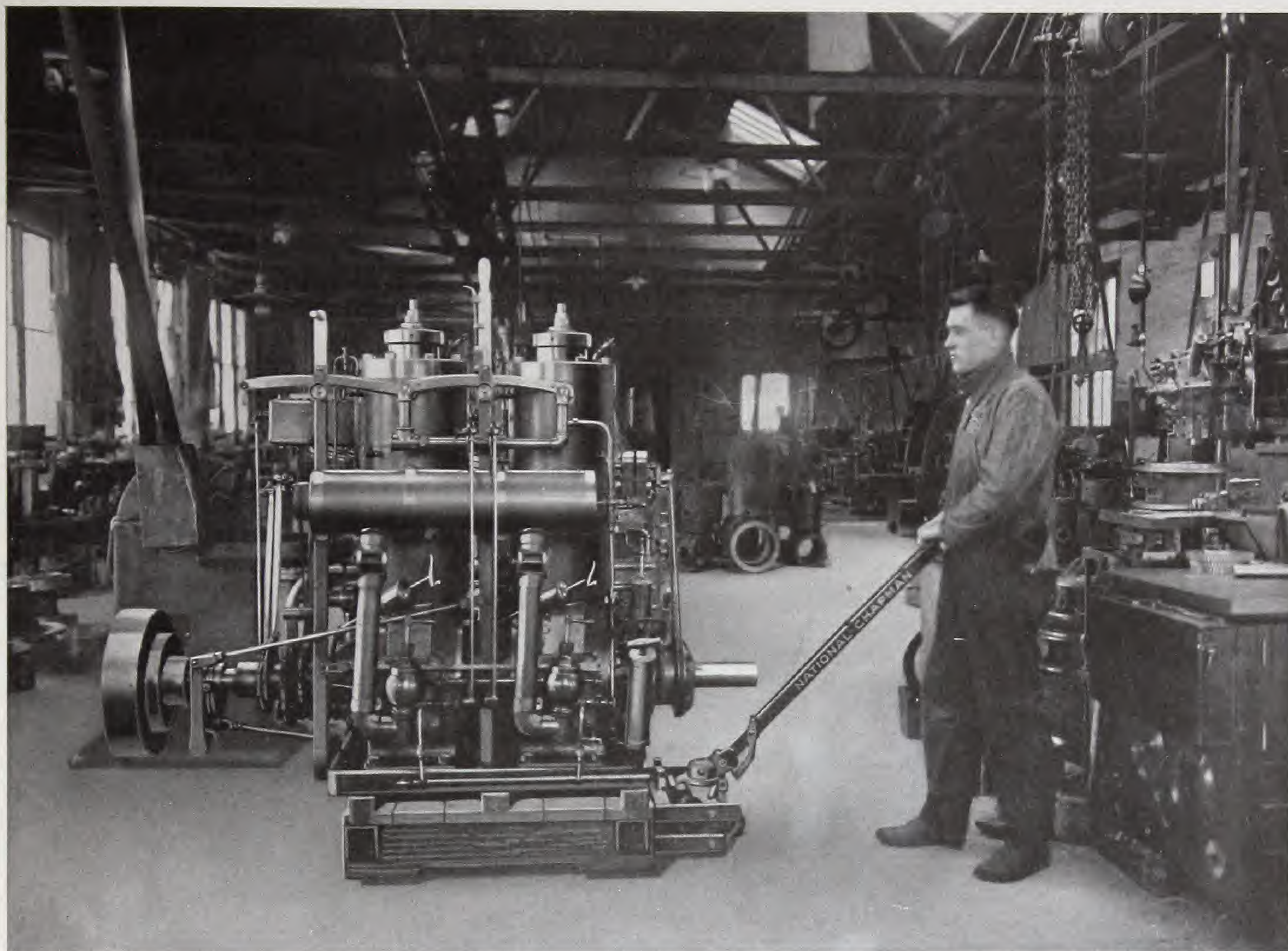
The skid idea, however, is now developing rapidly in a direct application to the speeding up of production.

Skids in the form of specially contrived boxes, bin sections, crates, racks, tables, etc., machine high or otherwise, are lessening the number of time consuming motions in handling material on the machines.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*Marine Gas Engines are assembled and tested on heavy wooden skids that are made to fit National-Chapman Elevating Trucks. Kablenberg Bros. Co., Two Rivers, Wis.*

The skid conveyers also provide a means whereby the position of all pieces of material carried can be standardized, and properly placed after each operation, ready for the next operation.

Especially designed skids are also saving time in assembling and finishing. The various parts of heavy machinery are assembled and set up on skids, and tested and shipped on the same skid, always in a position to be transported at will by the elevating truck.

Some manufacturers are now shipping goods on skids and having them removed from cars at destination by elevating trucks. A method which saves labor and decreases breakage.

The possibilities for money saving use of the National-Chapman Elevating Truck, with its skid system, is receiving more and more attention from manufacturers in every line of business. These trucks are an economic necessity.





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*A National-Chapman in the shipping room. All goods on skids, ready for instant transportation. Also note the No. 98 National Counting Machine at work. Pyrene Mfg. Co., New York City.*

## A FEW AMONG HUNDREDS OF INSTALLATIONS

	No. of Trucks		No. of Trucks
American Writing Paper Co., Holyoke, Mass.	51	General Electric Co., West Lynn, Mass.	32
Armour & Co., Chicago, Ill.	10	Erie, Pa.	19
Ashcroft Mfg. Co., Bridgeport, Conn.	13	Pittsfield, Mass.	18
The Baldwin Locomotive Works, Inc., Philadelphia, Pa.	85	Schenectady, N. Y.	27
Bethlehem Steel Co., South Bethlehem, Pa.	9	General Vehicle Co., Long Island City, N. Y.	18
Billings & Spencer Co., Hartford, Conn.	9	Hyatt Roller Bearing Co., Harrison, N. J.	41
E. W. Bliss Co., Inc., Brooklyn, N. Y.	141	Ingram-Richardson Mfg. Co., Beaver Falls, Pa.	11
Boston Woven Hose & Rubber Co., East Cambridge, Mass.	16	International Harvester Co. of Auburn, N. Y.	14
British Munitions Co., Verdun, Canada	37	James Mfg. Co., Fort Atkinson, Wis.	11
Brown-Lipe-Chapin Co., Syracuse, N. Y.	15	King Sewing Machine Co., Buffalo, N. Y.	11
Brown & Sharpe Mfg. Co., Providence, R. I.	14	Midvale Steel Co., Philadelphia Pa.	24
Buick Motor Co., Flint, Mich.	34	Mount Hope Finishing Co., No. Dighton, Mass.	10
Crucible Steel Co. of America, Harrison, N. J.	16	N. E. Westinghouse Co., Chicopee Falls, Mass.	47
East Jersey Pipe Corporation, Paterson, N. J.	18	Pierce-Arrow Motor Car Co., Buffalo, N. Y.	45
Eddystone Ammunition Corp., Eddystone, Pa.	13	Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.	29
Electric Auto Lite Co., Toledo, Ohio	10	Standard Steel Works Co., Burnham, Pa.	31
Endicott, Johnson & Co., Johnson City, N. Y.	15	Thurlow Steel Works, Inc., Elizabeth, N. J.	11
Fairbanks, Morse & Co., Inc., Beloit, Wis.	20	Traylor Engineering & Mfg. Co., Allentown, Pa.	16
Fisk Rubber Co., Chicopee Falls, Mass.	106	U. S. Envelope Co., Springfield, Mass.	10
Firestone Tire & Rubber Co., Akron, Ohio	17	Weston-Mott Co., Flint, Mich.	41
H. H. Franklin Mfg. Co., Syracuse, N. Y.	61	Whitney Mfg. Co., Hartford, Conn.	10
		The Willys-Overland Co., Toledo, Ohio	89
		Elyria, Ohio	17





# NATIONAL-CHAPMAN ELEVATING TRUCKS



*Efficient storage of flour on skids in a modern bakery—and National-Chapman Elevating Trucks to move the loads. Drake Bros. Co., Brooklyn, N. Y.*

## GUARANTEE

**N**ATIONAL-CHAPMAN ELEVATING TRUCKS are guaranteed for ONE YEAR from DATE of purchase against flaws in material and imperfections in workmanship, and we will replace WITHOUT CHARGE any defective parts, which may be returned to us within said period.

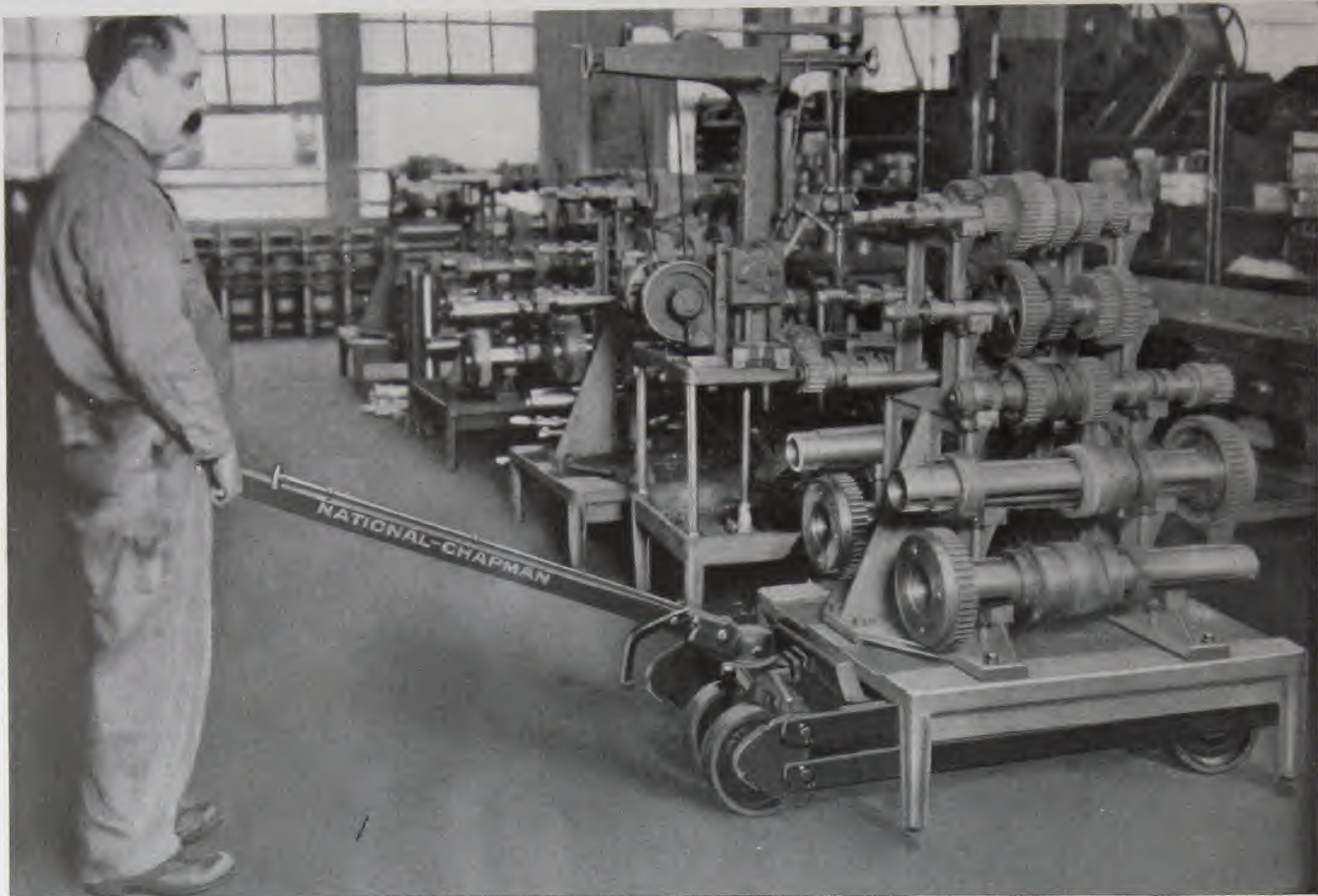
NATIONAL SCALE COMPANY

All Shipments of Trucks made  
F. O. B. CHICOPEE FALLS, MASS.





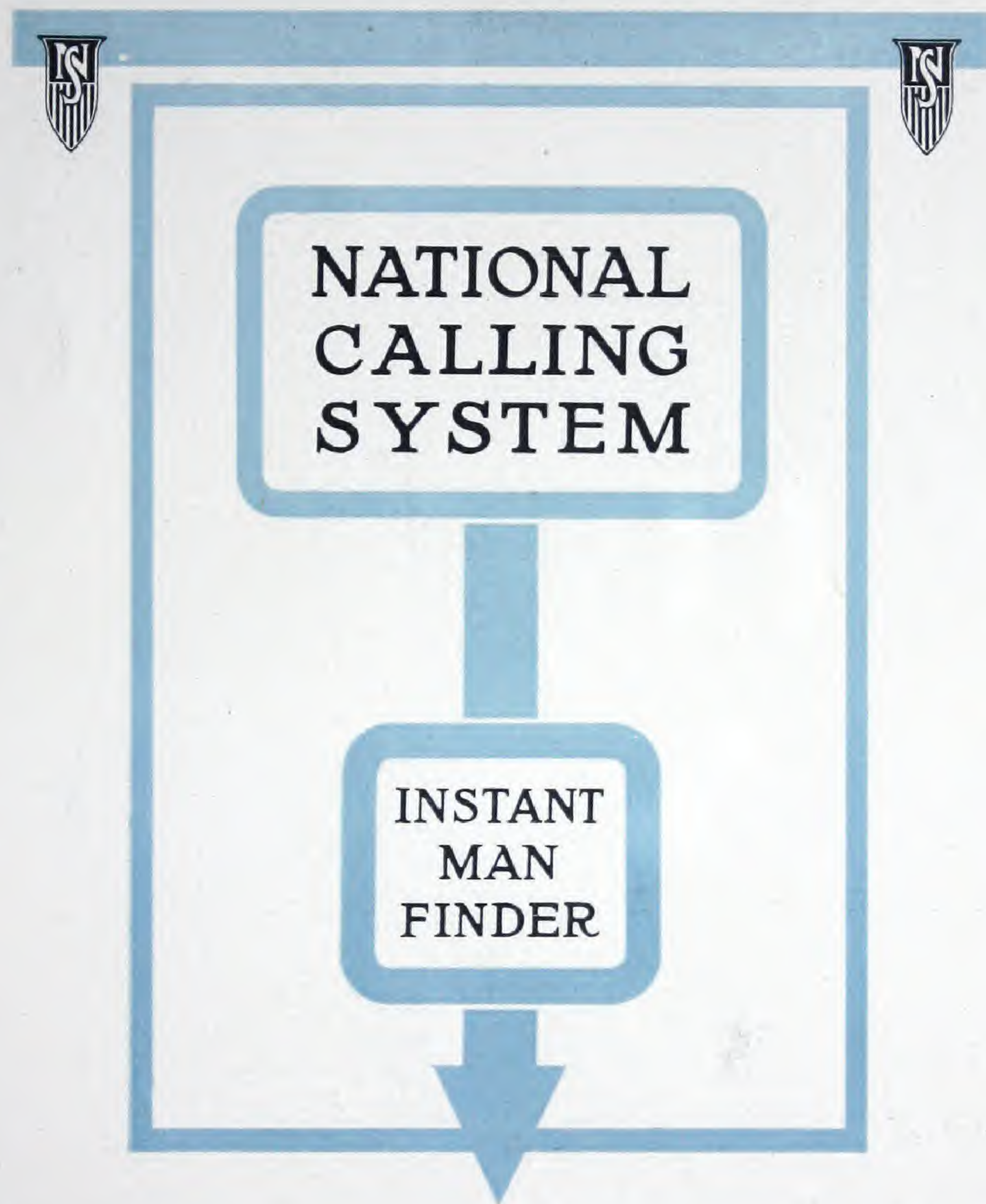
# NATIONAL-CHAPMAN ELEVATING TRUCKS



*Two photographs showing interesting types of special carriers in the plant of Jones & Lamson Machine Co., Springfield, Vt.—a time saving system of handling material made possible by National-Chapman Elevating Trucks.*











## NATIONAL CALLING SYSTEM



A COMPLETE installation of the National Calling System which keeps all executives in touch with each other at the Vulcan Iron Works, Eastern Malleable Iron Co., New Britain, Conn.





# NATIONAL CALLING SYSTEM



## The Operating Instrument

**T**HE Operating Instrument is made in one "Universal" model. It has a calling capacity of from one to forty-five code numbers, so that as many as forty-five different individuals can be reached.





## WHY THE NATIONAL CALLING SYSTEM IS A BUSINESS NECESSITY

**M**ODERN business is daily becoming more complex. Adverse conditions of competition, higher cost of materials, higher wage scales, scarcity of labor, etc., etc., must often be offset, not by higher selling prices, but by time saving and the adoption of more intensive methods of production and factory management. Such conditions make it imperative that every business executive be constantly in touch with the subordinates whom he pays to be his eyes, ears and mouth-pieces.

Much has been done to speed up and simplify inter-department communication by use of the telephone, but one difficulty encountered in the exclusive use of the telephone rests in the fact that you must first *find* the man you want before you can talk to him. "Man hunting" involves telephoning department after department — the disturbance of skilled employees taken from their work to answer such calls, and time delays which are often costly.

In other words, the inter-department telephone is inadequate for finding men because it is a hunter, when a *finder* is the thing that is needed. The ideal finding system is that which immediately locates the man you want, regardless of whether the plant covers a city lot or acres of ground, whether the buildings are one story or twenty in height.

And that device is the National Calling System. In the simplest manner possible, it instantly bridges the gap between the man who seeks and the man who is sought, no matter where either may be at the moment. Important matters that require immediate consultation with





## NATIONAL CALLING SYSTEM



subordinates do not have to wait because of the uncertain whereabouts of the man wanted. Information desired from department heads to answer telephone inquiries may be secured while the outside wire is being held, regardless of whether these men are at their desks or elsewhere about the establishment.

Hospitals, schools, offices, public buildings, and construction jobs as well as factories and commercial establishments can use the National Calling System to bring all executive members of the organization into closer touch. Its large calling capacity provides not only for present demands but for the future requirements of a growing business.

The National Calling System, besides providing a newer, better method of finding men, sets a new standard of efficiency among Calling Systems. Not only is it a marvel of mechanical ingenuity, simplicity, compactness and reliability, but it is equally remarkable in point of low cost of installation and maintenance.

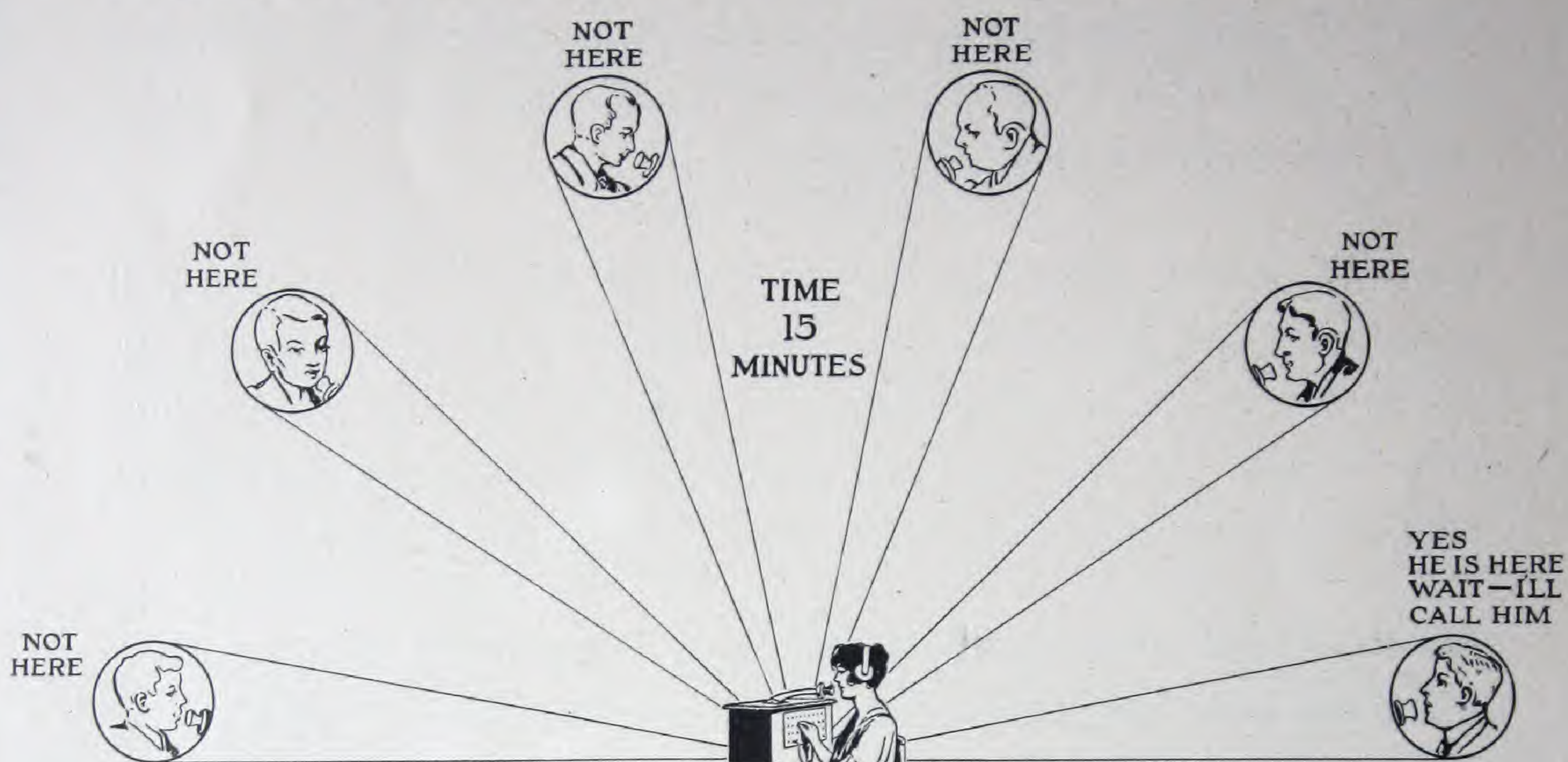




# NATIONAL CALLING SYSTEM



## "FIND—DONT STOP TO HUNT"



### THE OLD WAY—TELEPHONING SIX MEN TO FIND ONE MAN

**S**IX men wasting time! Figure the cost of labor minutes they lose in answering telephone calls and in getting back into working "stride."



### THE NATIONAL CALLING SYSTEM WAY

**T**HE man sought is found instantly, direct, without the intervention of other employees. As for the telephone operator—simply a turn of the hand instead of tying up her time and the lines with six telephone calls.



## Essential Features and Structural Details of the National Calling System

**The System:** The system is primarily the Operating Instrument, which is connected by wiring to a line of signals consisting of either bells, horns, buzzers, lights or whatever other electrical devices it is desired to use. These signals are distributed throughout the establishment in such a manner that every foot of floor-space is within the sound radius of at least one signal.

This Calling System has no direct connection with the telephone, but it is usually located, for convenience, near the telephone central station, within easy reach of the operator's hand. The Operating Instrument may, however, be placed anywhere on the circuit.

The System operates on a voltage of either 110 or 220, A. C. or D. C. It is always in service and there are no batteries to cause trouble or to be recharged. No special training is necessary to send a call as the operating mechanism is so simple that any one can understand it at sight. The consumption of current is so slight as to be a negligible factor.

**Operating Instrument:** The instrument is made in one "universal" model, which has a calling capacity of 45 different code numbers. There is no limit to the number of signalling devices which the instrument will control, provided sufficient current is let into the line to operate them. Within the Instrument case all working parts are mounted on a slate base, fully complying with the rules of the National Board of Fire Underwriters.

**Signal Control:** The signals are controlled by eight small levers which form the various simple code number combinations. After the levers are set the operating key starts the signals to sounding. When in operation a signal light flashes back the code number through a ruby crystal set in the instrument case — proof to the operator that the code number has been delivered properly to the line of signals.

**Construction and Finish:** The instrument case and base are made of pressed steel and are handsomely finished in black enamel. The trimmings are of brass, heavily nickel plated. The operating key and the eight levers are tipped with hard rubber.

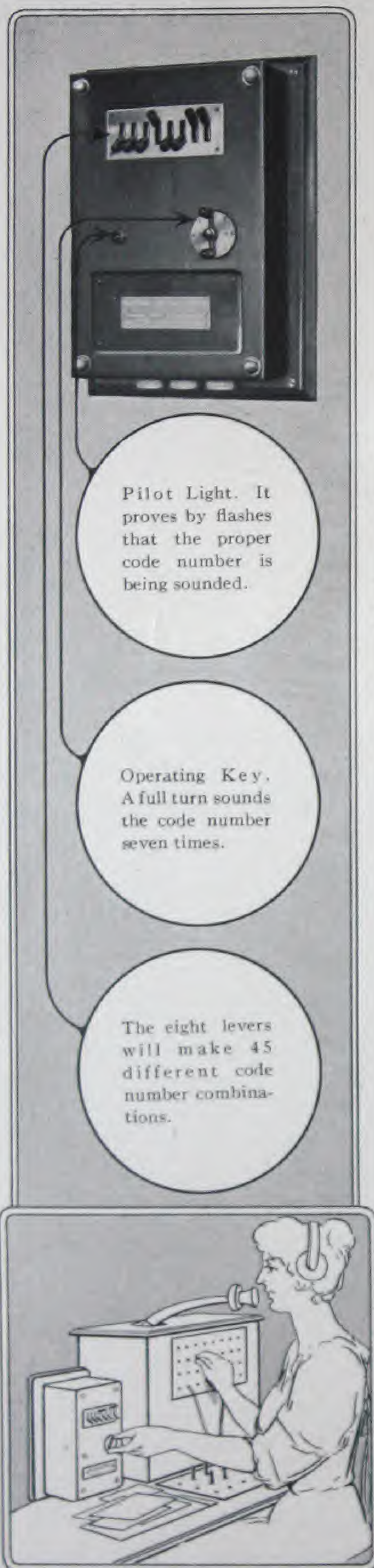
**Size of Instrument:** The instrument is sufficiently compact in size to fit in almost anywhere. It measures over all, including base,  $14\frac{1}{2}$ " high,  $10\frac{1}{2}$ " wide and  $4\frac{1}{2}$ " deep.

**Relay and Signals:** A relay is used in connection with each installation of the National Calling System. See description of relay and various types of signals beginning on page 47.





# NATIONAL CALLING SYSTEM



## Method of Operation

THE operation of the Calling System is exceedingly quick and simple.

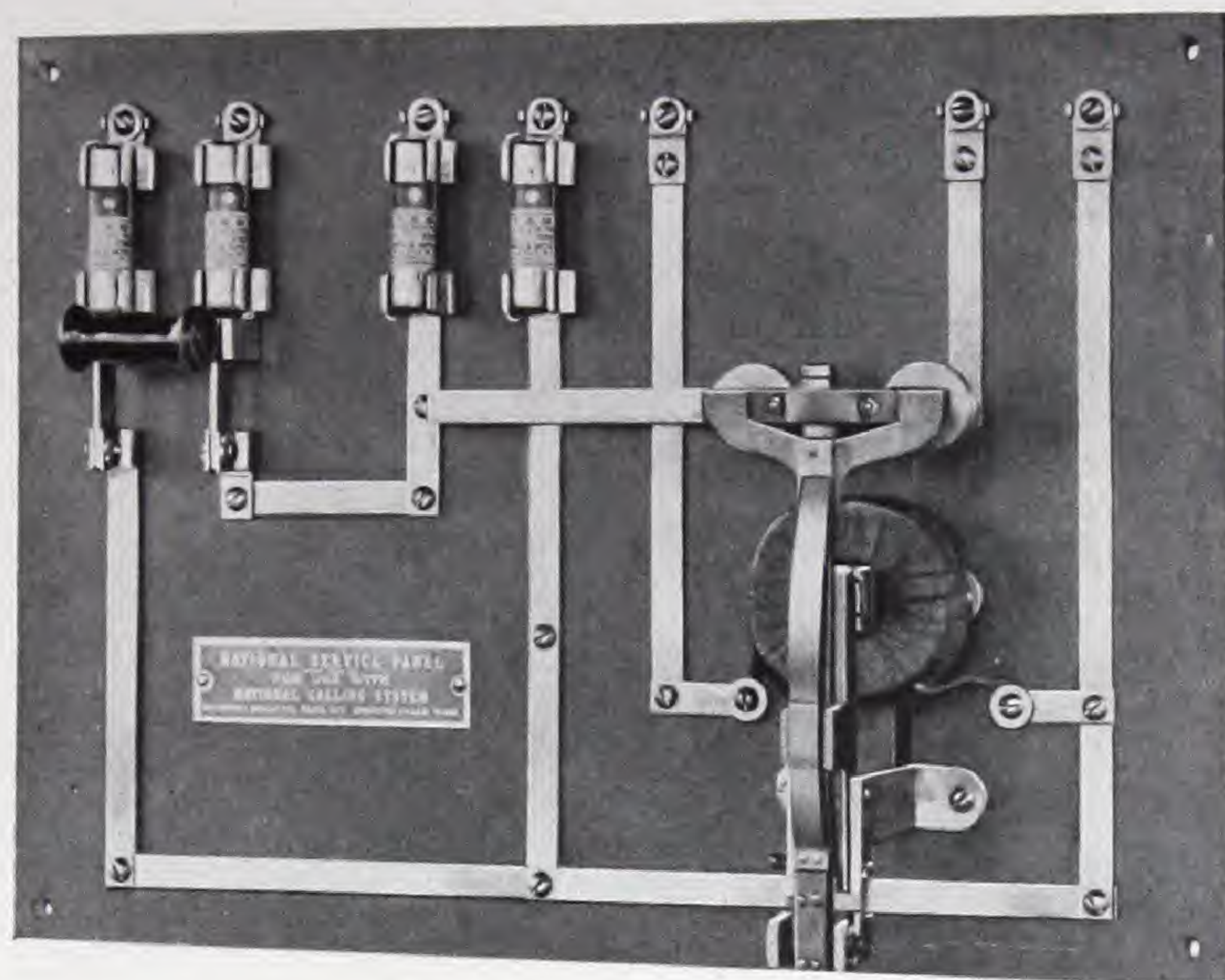
A downward sweep of the hand depresses the controlling levers on the instrument, which set the mechanism for the required code number. Then a quick turn of the Operating Key causes this number to sound, instantly and simultaneously, once, twice, or as many times as desired up to seven, on all the signals in the establishment. The number of repeats is regulated by stopping the Operating Key, on the turn, opposite any one of the seven numbers shown on the dial. The illustration shows the controlling levers set to call code number 32. It will be noticed that a single key is left elevated between the 3 and the 2. This same principle prevails, whatever code number is being called, as the elevated key creates the necessary pause between the collective sets of strokes, thus making the complete number unmistakable.

If the individual who is sought is found before the completion of the call, the operator can instantly shut off the signals by raising the first key.





# NATIONAL CALLING SYSTEM



## National Service Panel and the National Relay

### THE PANEL

THE National Service Panel is made of slate, conforming in every respect to requirements of the National Board of Fire Underwriters. Their report, Electrical No. 3835, dated March 7, 1917. On the panel are mounted the Relay, Service Switch and Fuses.

The Panel is housed in a pressed steel box, having a hinged cover. It may be located in any convenient place between the Operating Instrument and the first signal on the line. It is usually placed, however, where the service wires enter the establishment. The overall dimensions of the housing box are as follows: — Length,  $15\frac{3}{4}$ "; Width,  $12\frac{3}{4}$ "; Depth,  $6\frac{3}{4}$ ".

### THE RELAY

The National Relay is a necessary factor in the operation of the National Calling System. When a call is sounded it opens the way for the main current to enter the line of signals, without passing through the Operating Instrument, thus protecting the contact points of the Selector mechanism, which would otherwise have to break the heavy current.

The current taken by the Relay in closed position is very slight. Indeed, the total current consumption in operating the entire system, under average conditions, is very moderate.

No oil is used in the National Relay and it requires little or no attention after being installed. The following table shows the capacities in which it is furnished.

Type	Current	Ampere Capacity	Voltage Capacity	Average Number of Signals Operated
E	A. C.	15	110	30
F	A. C.	15	220	30
G	D. C.	15	110	30
H	D. C.	15	220	30





# NATIONAL CALLING SYSTEM



Only one bell is pictured because the National Single Stroke Bell and the National Vibrating Bell are identical in outward design.



## National Calling System Bells

### Single Stroke and Vibrating

NATIONAL Calling System Bells can be depended upon to do the work that is expected of them. The best of materials, careful workmanship and structural simplicity make them troubleproof to an unusual degree, whether working indoors or outdoors.

All working parts are housed in a metal case, finished in black Japan. The gongs are made of high grade bell metal, with a standard finish of polished nickel.

Gongs for outdoor use, having a weatherproof finish will be furnished on order.

#### SINGLE STROKE BELLS

110 or 220 Volts D.C.			110 or 220 Volts A. C. 25-40-60 Cycle		
No.	Size	Type	No.	Size	Type
61	6"	Indoor	63	6"	Indoor
81	8"	Indoor	83	8"	Indoor
101	10"	Indoor	103	10"	Indoor
121	12"	Indoor	123	12"	Indoor

#### VIBRATING BELLS

##### 110 or 220 Volts A. C., 25 or 60 Cycle

No.	Size	Type
67	6"	Indoor
84	8"	Indoor
104	10"	Indoor
124	12"	Indoor





# NATIONAL CALLING SYSTEM



## Ceiling and Side-wall Horn

FOR ALTERNATING CURRENT ONLY

**T**HIS horn provides a satisfactory signal for use where very noisy conditions make hearing difficult and where an intense, unusual note is necessary.

Dimensions: Diaphragm, 3"; Projector, 5"; Total length, 7". This horn will replace electric bells up to 8 inches in diameter. Made in one number only.



No. 207. 110 Volts A. C. 60 Cycles  $\frac{1}{2}$  Ampere



## The Long Horn

**T**HE powerful, unmistakable sound of this horn can be heard for a considerable distance amid a confusion of other sounds. It is made in three sizes, providing suitable equipment for factories, hotels, stores, warehouses, schools, mines, public buildings, theatres, etc., etc.

- No. 203. 110 Volts A. C. 60 Cycles  $\frac{1}{2}$  Ampere  
Size — Diaphragm 4 $\frac{1}{2}$ "; Projector 18"; length over all 24".
- No. 204. 110 Volts D. C.  $\frac{1}{2}$  Ampere  
Size — Same as No. 203
- No. 205. 110 Volts A. C. 60 Cycles  $\frac{1}{2}$  Ampere  
Size — Diaphragm 3"; Projector 14"; length over all 18".
- No. 208. 110 Volts A. C. 60 Cycles  $\frac{1}{3}$  Ampere  
Size — Diaphragm 2 $\frac{1}{2}$ "; Projector 10"; length over all 12".



## The Hummer

FOR ALTERNATING  
CURRENT ONLY

**N**OT a noisy signal, nevertheless the tone is smooth and penetrating. It is especially adapted for office use or can be placed in hospitals or other places where the resounding gong or loud voiced horn are out of place. When desired, a toning attachment is furnished on this Hummer, which further reduces the volume of sound. Furnished in one number only.

No. 206. 110 Volts A. C. 60 Cycles  $\frac{2}{10}$  Ampere



## The Vibrating Horn

FOR A. C. OR D. C. CURRENT

**A** HORN of the vibrating type and of water-tight construction. It delivers a sharp, penetrating note which makes it particularly desirable where the use of bells is impracticable.

These horns are so constructed that sparking is impossible. The case is of cast iron, the diaphragm of tempered steel and the projector of spun brass. All steel parts are copper-plated and finished in black enamel. Standard projectors are 7 $\frac{1}{2}$ " long.

- No. 200. 120 Volts D. C.
- No. 201. 120 Volts A. C. 60 cycles
- No. 202. 120 Volts A. C. 25 cycles





# NATIONAL CALLING SYSTEM



## Operating Instrument Pedestal

THE usual method of installing the National Calling System Instrument is to screw it fast to the wall or some other support within reach of the switchboard operator. It sometimes happens, however, that the necessary wall space is lacking or in an inconvenient position or there is no switchboard and operator.

Under such circumstances this pedestal proves a great convenience. It protects the instrument from injury and can be placed exactly where desired. The stand is desk high and the instrument is brought within easy operating distance of any one seated in an office chair.

**Construction:** The base and hollow standard of the pedestal are made of heavy cast iron, finished with silver bronze. The hard wood top is furnished in either oak or black finish. Wiring is not visible on this installation, all wires being brought up from the floor through the hollow standard and into the terminal connections at the bottom of the instrument. The base of the pedestal is screwed fast to the floor.



## INSTALLATION

INSTALLATION of the National Calling System can be made by your own electrician or local contractor. All wiring must be done under Underwriters' requirements. We furnish diagrams without charge.

Estimates furnished on the complete National Calling System (including quotation for installation, when desired) or on any parts of the System, including bells, wire, etc.

*Note: In estimating on your requirements it will be necessary for us to know what current is to be used, the voltage, and if alternating current, the cycle.*

All Shipments Made F. O. B. CHICOPEE FALLS, MASS.



# NATIONAL CALLING SYSTEM

## WHAT OTHER PEOPLE THINK ABOUT THE NATIONAL CALLING SYSTEM

COTTA TRANSMISSION CO., Rockford, Ill.

"We are pleased to advise that the National Calling System, recently installed, is very satisfactory and saves many steps and a great deal of time to the heads of the various departments."

(Signed)

E. P. Reber, Gen. Mgr.

CORONA TYPEWRITER CO., INC., Groton, N. Y.

"Outside of a few minor difficulties which we have experienced in adjusting of relays the Calling System has given us very satisfactory service indeed. We consider it a very beneficial investment."

(Signed) C. T. Yates, Purchasing Agent.

THE BRIDGEPORT METAL GOODS MFG. CO.,  
Bridgeport, Conn.

"The Calling System in our plant is giving perfect satisfaction in every respect."

"We find it a great device for saving the time of our executives."

(Signed)

Chas. F. Turner.

DINGLEY-FOSS SHOE CO., Auburn, Me.

"The National Calling System which we have installed in our factory is doing very satisfactory work, and we find it a great convenience in locating parties in the different parts of the plant."

"We consider it practical in every way, meeting fully the requirements of a system of this kind."

(Signed)

Mr. Keith.

THE PEERLESS WIRE GOODS CO., Lafayette, Ind.

"With reference to the National Calling System purchased from you under date of September 13th, 1916 we are pleased to state that we have found it satisfactory in every respect."

"We can recommend this device to any concern, where it is necessary to communicate with heads of departments, as a time saver; and the upkeep is such a small item that it is hardly worth mentioning."

(Signed)

E. R. Clegg, Treas.

### Some Users of The National Calling System

Edison Phonograph Works, Orange, N. J.  
Corona Typewriter Co., Inc., Groton, N. Y.  
Savage Arms Corporation, Utica, N. Y.  
Gillette Safety Razor Co., Montreal, Que.  
Vulcan Iron Works, New Britain, Conn.  
Watson-Stillman Co., Aldene, N. J.  
United Hosiery Mills Corporation, Chattanooga, Tenn.  
Barney & Berry, Inc., Springfield, Mass.  
Cortland Carriage Goods Co., Cortland, N. Y.  
Bowen Mfg. Co., Auburn, N. Y.  
Dingley-Foss Shoe Co., Auburn, Me.  
Bridgeport Metal Goods Mfg. Co., Bridgeport, Conn.  
Chicago Carton Co., Chicago, Ill.  
Oneida Community, Ltd., Oneida, N. Y.  
Cotta Transmission Co., Rockford, Ill.

Corbin Cabinet Lock Co., New Britain, Conn.  
Pfister & Vogel Leather Co., Milwaukee, Wis.  
Wasson Piston Ring Co., New Brunswick, N. J.  
The Russell Mfg. Co., Middletown, Conn.  
Metal Auto Parts Co., Indianapolis, Ind.  
Arvac Mfg. Co., Anderson, Ind.  
Rome Mfg. Co., Rome, N. Y.  
Kitselman Bros., Muncie, Ind.  
The International Silver Co., Waterbury, Conn.  
Conn. Tel. & Elec. Co., Meriden, Conn.  
Cronk & Carrier Mfg. Co., Montour Falls, N. Y.  
Palmer Mills, Three Rivers, Mass.  
Stewart Silk Co., Easton, Pa.  
United Drug Co., Roxbury, Mass.  
Steel Equipment Corporation, Avenel, N. J.

## GUARANTEE

THE National Calling System Operating Instrument, the Relay, and all National Signals are guaranteed to comply strictly with the standard structural requirements of the National Board of Fire Underwriters and to be free of all defects in material and workmanship.

When the National Calling System is properly installed and operated according to instructions furnished, we guarantee its satisfactory operation for the term of one year from date of purchase; and we will make, free of charge, such repairs as are necessary during that time, to keep the system in good working order.

NATIONAL SCALE COMPANY

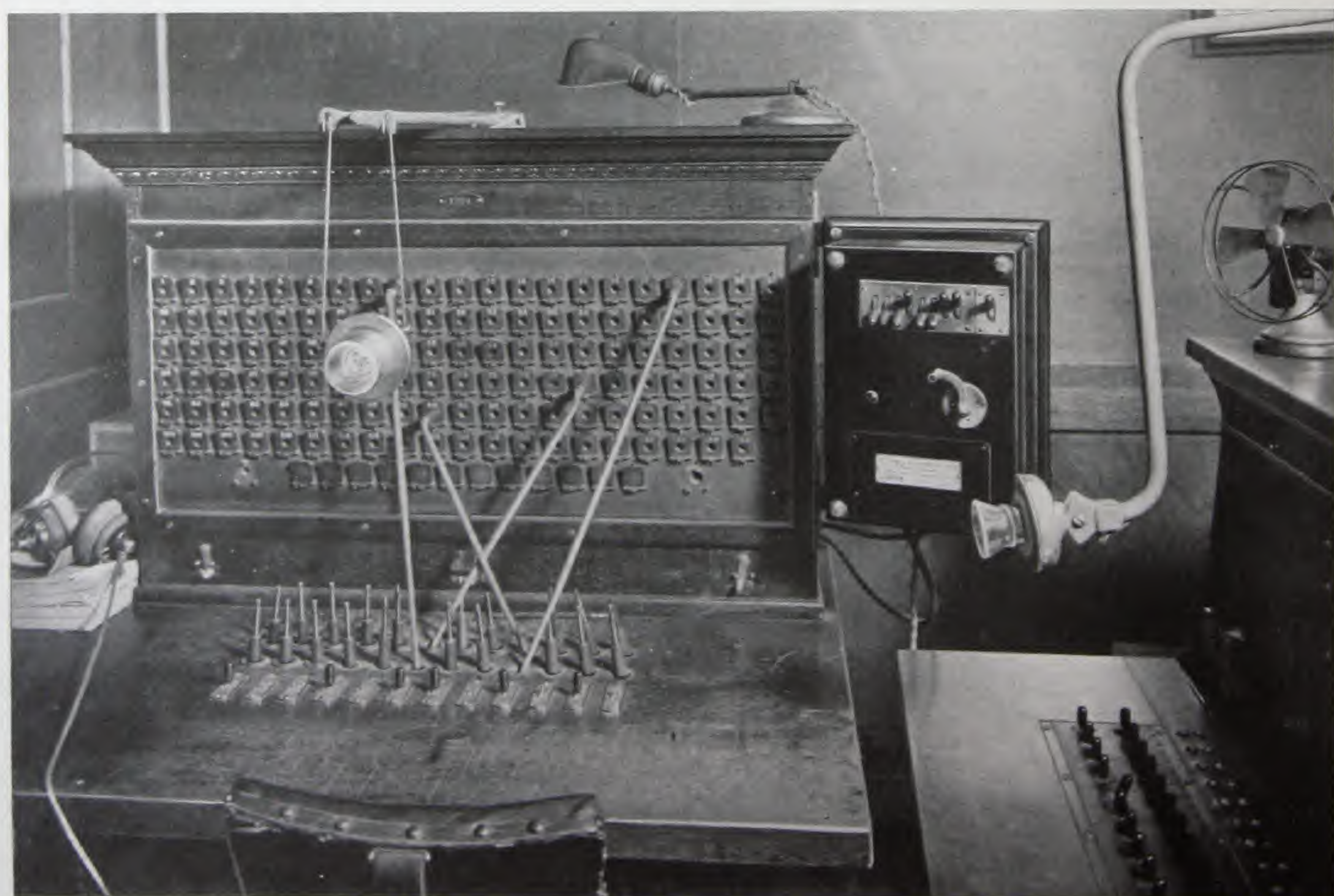




# NATIONAL CALLING SYSTEM



Above is shown a desk installation of the National Calling System. Barney & Berry, Inc., Springfield, Mass.  
Below is The National Calling System which finds men instantly at the Corbin Cabinet Lock Division of the American Hardware Corporation, New Britain, Conn.





***"MULTI-UNIT"***

**SECTIONAL  
STEEL  
SHELVING**

(BRYNING PATENT)







## MULTI-UNIT SECTIONAL STEEL SHELVING



THIS photograph shows one of our installations of "Multi-Unit" Sectional Steel Shelving. Note the many varieties of arrangement and types of material provided for.



## STORE-ROOM EFFICIENCY

A FEW years ago storage was considered a minor detail and consequently did not get the attention it is now receiving under present day factory management,

Cost accounting, which traces each dollar of expenditure and each minute of wasted time, has given new importance to the matter of how stores are handled. Indeed, the whole chain of production is sometimes hampered by this one weak link.

"Multi-Unit" Sectional Steel Shelving is the product of an intensive study of storage requirements. It provides equipment which will *file* material away — not bury it. It is designed to aid production — not to hinder it.

The advantages of this shelving are many. Its mobility and its convertibility into convenient receptacles for handling widely varying types of material, its great strength, its economical use of floor space and the fact that it is fireproof and practically indestructible makes it especially desirable. Also that it can be purchased in sections and added to as conditions require.

Changes of location are easy of accomplishment with "Multi-Unit" equipment, without serious interference with the necessary work of the storeroom and without the charges for labor and new material which inevitably follow alterations on wood construction.

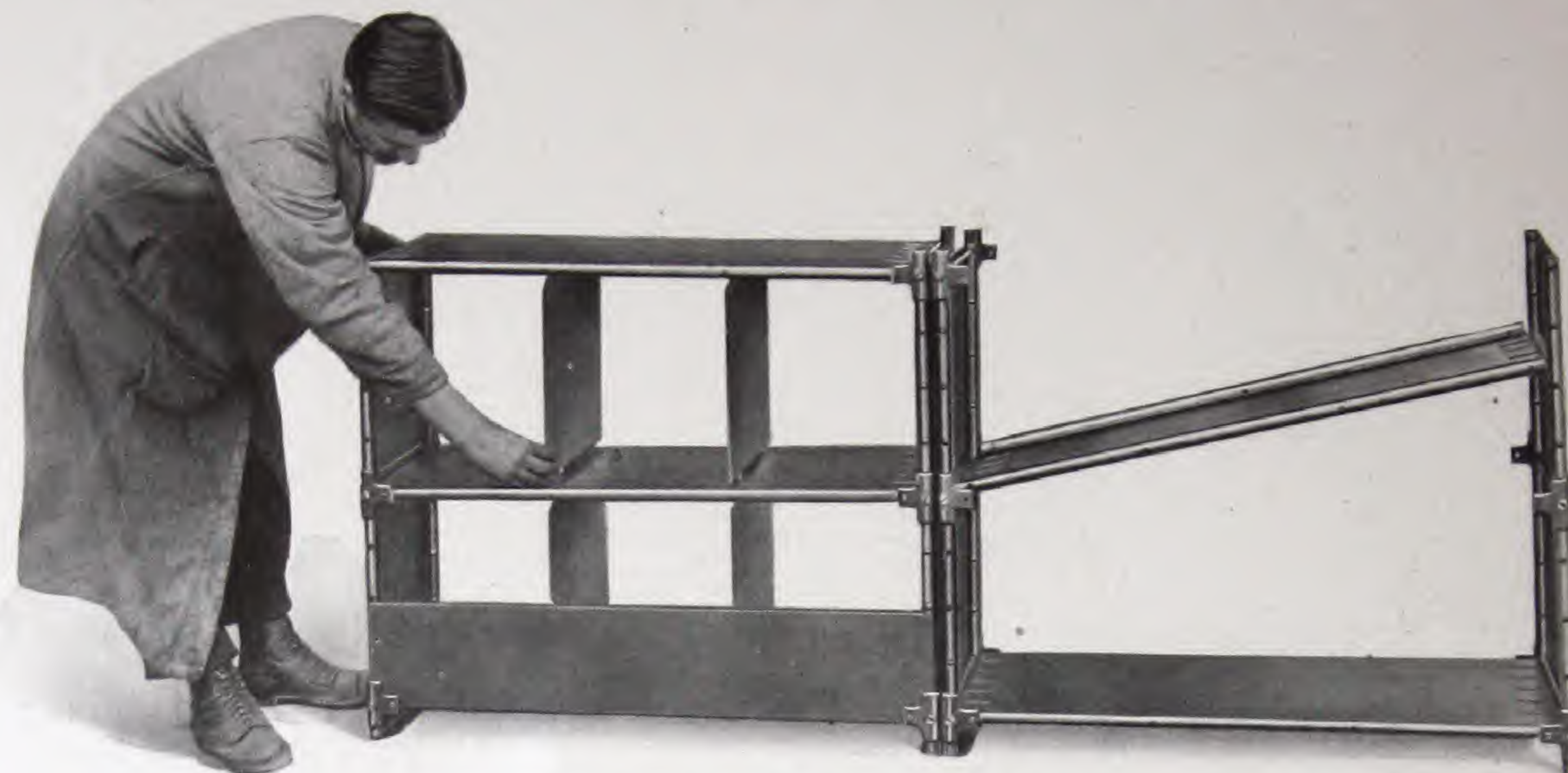
"Multi-Unit" Sectional Steel Shelving is not too expensive for general use in quantities, wherever shelves or bin sections are required. It provides the most efficient storage facilities for factories, stores, warehouses, banks, offices, public buildings, schools, etc., etc.

There are two styles of "Multi-Unit" Sectional Steel Shelving which are known as the "Adjustable Shelf" Type and the "Fixed Shelf" Type. These are fully explained on the following pages.





# MULTI-UNIT SECTIONAL STEEL SHELVING



Showing the Method of Assembling Units

## Adjustable Shelf Type

**Construction.** This shelving makes up into stacks of plain shelves, with or without backs, or into bin sections suitable for different kinds of material. The shelves may be raised or lowered at will. Bin sections are easily adjustable to different widths.



No ladder needed to reach the topmost bin

All parts are standardized and interchangeable, easily and quickly erected or taken down. The stacks may be made up singly or arranged in series.

The most noticeable feature in the construction of this shelving is the tubular edges of uprights and shelves. The tremendous strength of this type of construction is obvious. Its advantages are especially apparent in relation to shelf support, all shelves being solidly supported, not by flanges or clips, more or less securely fastened, but by a heavy bolt which passes, from the rear, through a pressed steel tee and a perforation in the rear tubular edge of the upright, then out through a like perforation in the front tubular edge of the upright and another tee, where it is brought up tight by a cap nut. In addition, the projecting arms of the front and rear tees are bolted securely into the tubular edges of the shelf, thus adding additional strength. The ends of the shelves rest on the bolts, with tip edges pressing tightly against the uprights when the structure is brought together.

See next page for further details



THIS photograph illustrates a few of the possible variations in arrangement of shelves and bin sections. The clearance between the top shelves is  $2\frac{3}{16}$ " the standard minimum clearance to which shelves can be adjusted. Two variations in bin sizes are shown, with bin fronts of suitable heights. Bin sections may be adjusted to any width in multiples of six inches.





# MULTI-UNIT SECTIONAL STEEL SHELVING



## Adjustable Shelf Type

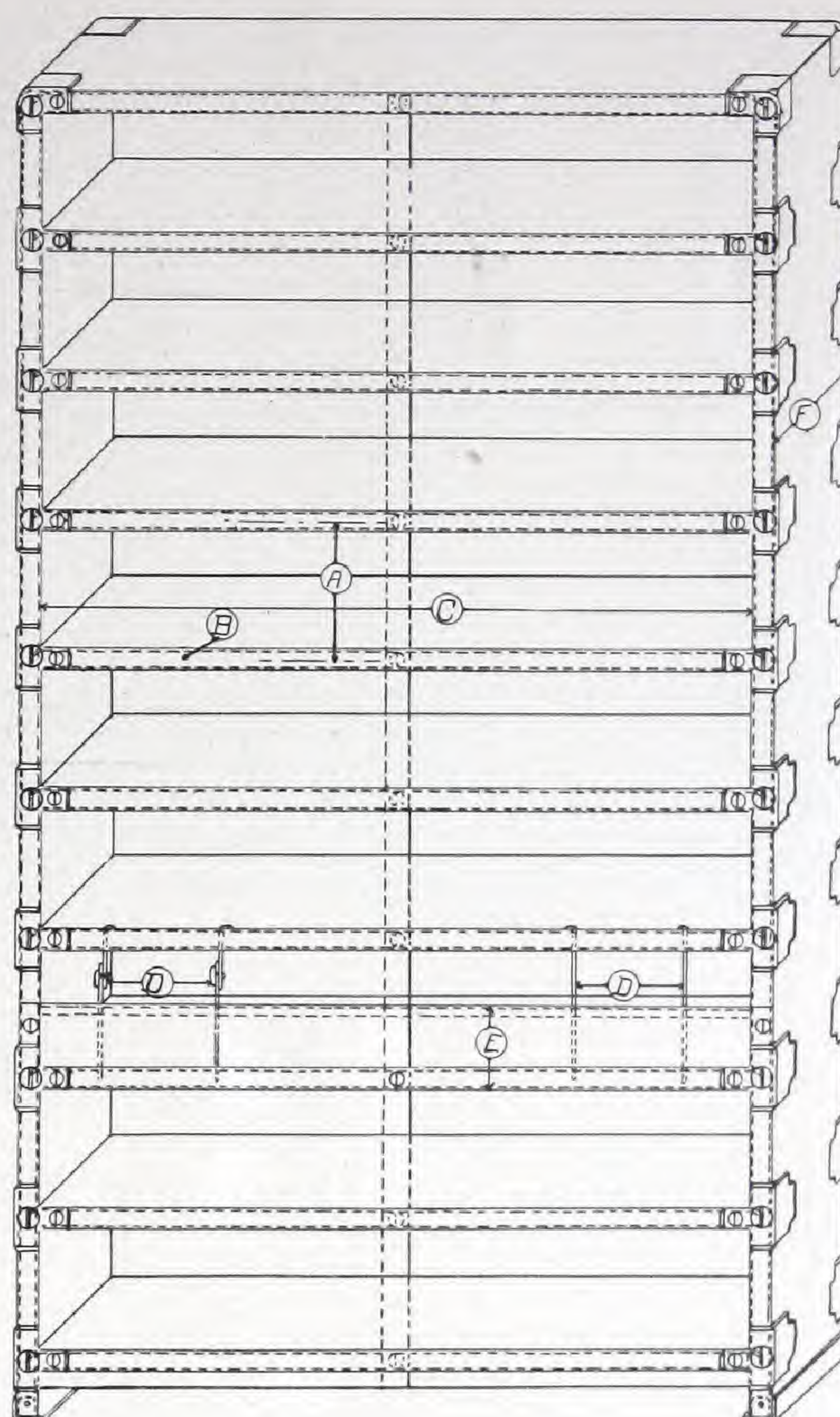
**Standard Dimensions:** The adjustable Shelf Type of Shelving is furnished in stacks of any height desired with all other dimensions standard as follows:—

- A — Centre to Centre of shelves,  $3\frac{7}{8}$ " multiples
- B — Thickness of shelves,  $\frac{7}{8}$ "
- C — Distance between uprights, 36"
- D — Distance between partitions, 6" multiples
- E — Heights of bin fronts, 2"-4"-6"
- F — Depths — distance from front to back, 10"-12"-14"-16"-18"

(See diagram at right)

**Standard Material:** The best grade of full pickled, full cold rolled steel is used in "Multi-Unit" Sectional Steel Shelving, in weights specified by our Engineering Department according to the nature of the load to be supported and always with a liberal margin of safety for overload.

**Finish:** All "Multi-Unit" Sectional Steel Shelving is finished either in plain steel, which can be painted at will, or in three baked enamel finishes. Colors:—Olive Green, Dark Green and Black. Bolt heads are heavily nickel plated.

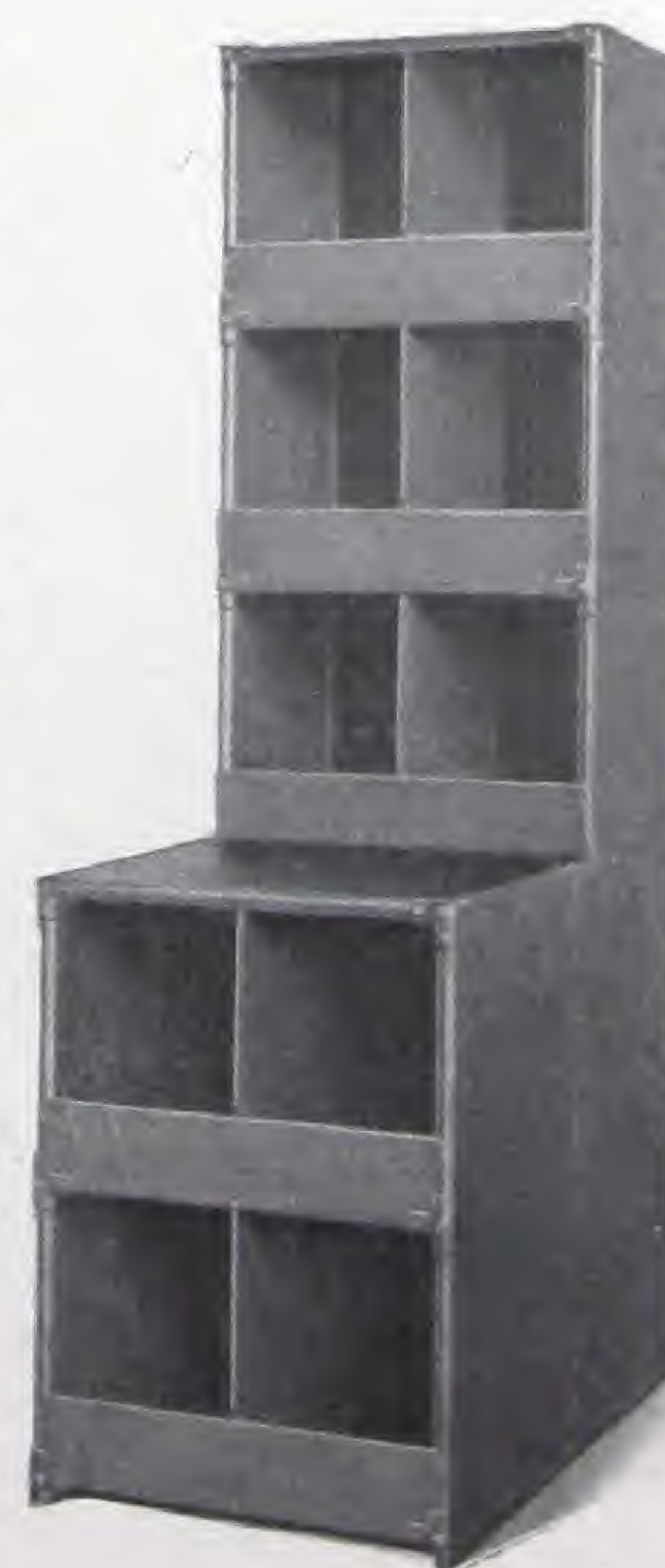


**Combination Stacks:** When desired, stacks can be furnished with shelves of graduated depths. In these stacks the lower sections may be 18" in depth, and the upper sections 10" in depth, or any other combination of sizes. This arrangement creates a ledge at convenient height which often proves useful. Where shelves are required in excess of 18" in depth two stacks of sizes to make the required total depth are securely fastened together, one in front of the other. See photograph at the right.

Estimates quickly furnished on all shelving requirements

**Left:** Combination stack of shelving 10" in depth at top, 14" in depth at bottom.

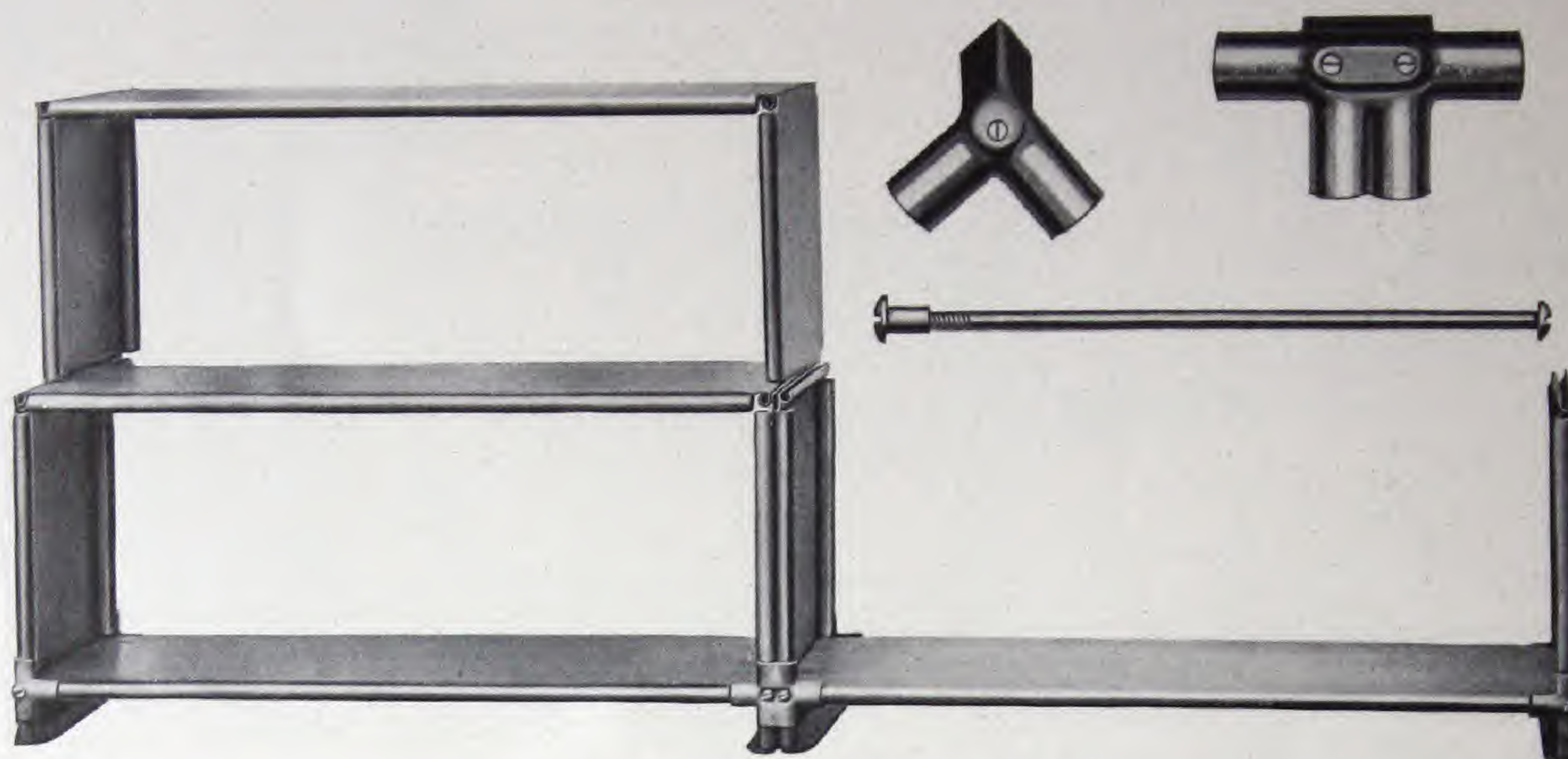
**Right:** Showing method of combining stacks to make the depth greater than 18".







# MULTI-UNIT SECTIONAL STEEL SHELVING



Showing Method of Assembling Units

## Fixed Shelf Type

**Construction.** It will be observed that the Fixed Shelf Type has the same powerful tubular edge construction as the Adjustable Shelf Type, but that the uprights of the Fixed Shelf Type are of predetermined unit heights. Two uprights, combined with two shelves and back, make a complete base unit. On top of the base unit may be built other units, consisting of two sides and one shelf, with back. In this manner stacks of any desired height or a series of connected stacks are created. Each stack is kept clear of the floor by two short uprights or bases, which lock into the structure. The bases have flanged bottoms, which afford strong and steady support for heavy loads. This shelving is furnished with paneled backs or without as desired. It can also be furnished with bin fronts and dividers.



A five unit single stack,  
Fixed Shelf Type

**How To Erect:** It is a simple matter to erect this shelving. The top and bottom edges of all uprights are of tubular construction as are also the ends of the shelves. All parts telescope and are securely locked together by passing the long bolt through the rear binding tee and the circular cavity left where shelves and uprights come together, and then out through the front binding tee, where a cap nut draws the bolt up tight.

**Adaptability:** While the Fixed Shelf Type of shelving does not afford opportunities for adjustment of the distances between shelves, it thoroughly meets requirements where the material to be stored is in practically fixed sizes, which would make adjustable shelves seldom used or absolutely unnecessary.

In addition, the opportunity to add to the equipment from time to time in small complete units, is a factor of importance in many instances.

**Standard Material:** The material is the best grade of full pickled, full cold rolled steel of either heavy or medium weight, depending upon the character of the articles to be stored.





# MULTI-UNIT SECTIONAL STEEL SHELVING



**Finish:** This shelving is furnished in plain steel for purposes of rough, heavy storage, which may be painted at will, or in three baked enamel finishes which harmonize with the furnishings of modern business establishments. These finishes are Olive Green, Dark Green and Black. Bolt heads are heavily nickel plated.

In the enamel finishes the shelving presents a very handsome appearance, making it most satisfactory equipment for stores, offices, warerooms, banks, public buildings, schools, etc., or even in the home.



Three five unit stacks, Fixed Shelf Type, arranged in series

## Parts Which Make Up One Base Unit

2 Bases	4 Single Tees
2 Uprights	4 Corners
2 Shelves	4 Bolts
1 Back	

## Parts For Each Additional Unit In Same Stack

1 Shelf	2 Bolts
2 Uprights	4 Single Tees
1 Back	

## Standard Dimensions of Units

Length of Shelves, 36"

Depth or Width of Shelves, 10"-12"-14"-16"-18"

Height in clear between shelves, 10"-12 $\frac{7}{8}$ "-14"-16"-18"

*Note: This shelving can be furnished, if desired, in special heights between shelves as follows:—20"-22"-24"*

When stacks are placed in series the adjoining sides of stacks are held together by double tees and crosses at the points where the shelves intersect with uprights.

**Installation:** In order to afford the most satisfactory installation of "Multi-Unit" Sectional Steel Shelving, our Engineering Department will gladly cooperate in solving troublesome questions of storage disposal or will furnish complete estimates. State the conditions under which the shelving is to be used, the kind and weight of material to be stored, and, if possible, furnish a rough sketch with dimensions of the space to be occupied.

**All Shipments Made F. O. B.  
Chicopee Falls, Mass.**

A five unit stack, Fixed Shelf Type,  
knocked down ready for shipment







## MULTI-UNIT SECTIONAL STEEL SHELVING



A CORNER in an efficient storeroom, showing a part of a section devoted to the storage of heavy castings.









NATIONAL BUREAU OF STANDARDS  
NIST  
100 BUREAU DRIVE  
GAITHERSBURG, MARYLAND 20899  
(301) 975-3000











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